Antiquity

A Quarterly Review of Archæology

Edited by O. G. S. Crawford, F.S.A.

JUNE 1929

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HISTORY

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Antiquity

A Quarterly Review of Archæology

VOL. III NO. 10 JUNE 1929

Editorial Notes

TWO important events have taken place since our last number appeared: Stonehenge has been saved; and, under the Royal Tombs of Ur, Mr Leonard Woolley has found The Flood.

The Royal Tombs were constructed at the bottom of deep shafts, dug through a thick deposit of stratified earth containing immense quantities of pottery. This deposit is obviously older than the tombs; and it appears to have been a refuse-dump containing the rubbish of the Ur of those times. It was formed in the same way as any modern municipal dump, but of course more slowly. The strata immediately outside the town dip at a steep angle (45°); those further away from it flatten out to the horizontal. The formation of these outer strata is partly natural, through the agencies of wind (depositing dust) and rain; but they contain a fair amount of pottery and 'in each stratum the fragments lay, not at all angles, as they do higher up, but flat at the bottom of a deposit of smooth, water-laid mud . . . . The earlier settlements [whose buildings Mr Woolley found] had been formed on an island in the marshy delta of the Euphrates; the rubbish heaps flung out from the walls had gradually increased the size of the island by filling up the edges of the marsh, and had been later utilized as a burying-ground'. (*The Times*, 16 March).

Having dug down through this deposit to the level of the outer plain, 'the workmen announced virgin soil, a clean water-laid clay, without the slightest admixture of pottery or ash or other human débris . . . . That there might be no possible mistake, we carried our pits deeper, through eight solid feet of clean clay, and then suddenly came upon a flat stratum rich in flint chips and cores, pottery like that found above and *painted fragments of that Al 'Ubaid ware* which I had last summer labelled as antediluvian!' [The italics are ours]. At the bottom was found a burnt brick of a wholly new type, proving that 'at the time when the painted pottery and the flints were in use, Ur was not merely a village of mud huts, but already a town, civilized and properly built. Then, at a few feet above sea-level, real virgin soil, the clean river silt of the island on which the first huts were built'. From this it is inferred that the Painted Pottery People, the earliest settlers of all, were overwhelmed by a flood—*the* Flood—which deposited the eight feet of clean clay.

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That the Flood of Genesis was also the Flood of the far older Sumerian records admits of no doubt.* That it was an historical event localized in Mesopotamia has long been held by all reasonable people. Tangible, archaeological evidence of it, however, has not hitherto been forthcoming. Interest centres in that eight-foot bank of clay. Does it represent a single event or a series? And how long did it take to form? These hard questions will doubtless be answered in time; they will yield to a concentrated fire from several directions, the principal weapon used being the spirit-level and staff in the hands of a surveyor. On the other hand, it is easy to imagine how such a bank might have been formed on the down-stream shore of an island or shoal. Here more than elsewhere, in the slack water, fine silt would rapidly accumulate, derived not only from the flood-water generally, but also from the submerged slopes of the mound or shoal itself. If not wholly submerged the friction along the wind-and-water-line of the island would greatly increase the supply of fine silt from this latter source.

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* The legend of the Flood is known to have been current in Sumeria at least as early as B.C. 2000. The best account will be found in the British Museum Handbook: *The Babylonian Story of the Deluge and the Epic of Gilgamish, with an account of the Royal Libraries of Nineveh.* 1920. Price 1*s* 6*d*.

Mr Woolley has a very strong case, and will doubtless strengthen it yet more in the future. His annual address before the Society of Antiquaries of London will be delivered on 13 June.

Immediately after the announcement was made in *The Times*, Dr Langdon claimed, on behalf of the Kish excavators, that traces of the Flood had been found there also (*Daily Telegraph*, 18 March). Kish is only 140 miles from Ur; and a flood of any magnitude must have affected a very large area. The correlation of the Flood-stratum on both sites would have the most far-reaching consequences ; it would purge Sumerian chronology of many errors, and provide a fixed datum-point of incalculable value. But we fancy the problem is more complicated than appears at first sight. There may, for instance, have been several Floods. Apart from accurate levelling which, as a foundation for the drawing of sections is, of course, of prime importance, good results might be achieved by close examination of the soil by a conchologist. This might determine the character of the water by which it was deposited and could be done in England from samples.

The saving of Stonehenge from the threat that overshadowed it is an achievement of which we may all feel proud. That it was possible to raise more than £30,000 in the short space of 2 years for a purely idealistic project, is a fact that speaks for itself. There is still some tidying up to be done and this was purposely left until the main object should have been attained. Personally, we should like to see *all* the buildings near it removed, including those on Lark Hill ; but the practical difficulties are great, and they must be faced by reasonable people. Stonehenge has to be protected from those who would leave paper bags, old bottles and camp fires behind them, to say nothing of those more ambitious spirits who attempted last year to lever off one of the great lintel-stones. The custodians must be protected from the weather and must live somewhere near. They work for long hours during the summer and carry out their none too easy task with cheerfulness and efficiency ; they cannot be expected to work all night as well, and it seems desirable that they should be reinforced by a night-watchman with a couple of dogs—say Alsatians who have had their licences endorsed—at any rate during the period of the annual training camps.

Archaeologists will always be grateful to the Royal Air Force for the sympathetic way in which they receive their demands for assistance. Air-photography is now, as Dr Wheeler says below on page 182, a necessity rather than a luxury in the equipment of a field-archaeologist, but a special aeroplane is usually beyond his means. Air-photography being also a military necessity, for which training is required, it is not difficult to see how the interests of both parties may be served at the cost of no more than a little organization. This has now been achieved and, whilst we must not expect elaborate surveys of large areas, we may well look forward to a regular stream of interesting results. Selected negatives of British sites will be handed over to the Ordnance Survey, which already has a large collection; those of sites overseas will be stored at the British Museum. As a nucleus the Editor has already handed over to the Director of the British Museum those R.A.F. negatives which he was allowed to select during his recent tour in the Middle East. Some of them are reproduced in this number.

In Northern Ireland, a similar co-operation has been effected, and we are promised the first fruits for a forthcoming number of ANTIQUITY.

Last month we suggested that it was possible to have too much excavation as well as too little; and that, at any rate, it was time that some discrimination was made between urgent (threatened) and non-urgent sites. By a curious coincidence, a very similar policy was advocated quite independently by Dr Wheeler in the March number of DISCOVERY; and in his description of Caistor (below, pp. 182–7) he illustrates his argument by a case in point. There is, of course, ample scope abroad for adventurous spirits who wish to make a name for themselves. For example the region between Scinde and the head of the Persian Gulf still hides many secrets; and it may well solve the riddles of the early civilizations of India and Mesopotamia. Afghanistan is closed for repairs, but Baluchistan is not. Transcaspia to the north is almost an untrodden field, though the excavations of Pumpelly at Anau showed how fruitful it is. Another very promising region is the south-western corner of Asia Minor, the ancient provinces of Lycia, Caria and Pamphylia. No prehistoric sites have been excavated there, but Cretan evidence suggests that they exist and that they would reveal a new phase of ancient civilization.

Yet another neglected sphere is the later historic period in Iraq, that of the Hellenistic, Parthian, Sassanid and Mohammedan empires. Hitherto this has been the special preserve of French and German savants. We would be the last to disparage work on the earliest periods, to which so much space has been given in ANTIQUITY, but surely there is room for a British, or British and American expedition to excavate these later sites? Dastagerd for instance, where stood the summer palace of the Sassanid kings; or Raqqa on the Euphrates, the source of the famous pottery. For the history of art and architecture the complete uncovering of such ruins as these would be of immense value, and the finds would be such that no museum would have cause to repent of supporting such an expedition.

The exhibition of recent archaeological discoveries in the British Isles arranged by the British Archaeology Committee (University College, London), of which Dr R. E. Mortimer Wheeler, F.S.A., was the secretary and organizer, attracted a large number of visitors from 19 February to 16 March. Much of its success lay in its select character, for the exhibits could be seen, and understood, without undue exertion, and the general public—with no great knowledge of the archaeological work which is being done in the British Isles—could not fail to be interested. Each exhibit was arranged so as to show its significance and history, and the catalogue prepared by Dr Wheeler gave very clear explanations. The exhibition will in future days perhaps be regarded as a land-mark. It is evidence, also, that British Archaeology (that is, the archaeology of Britain) is full of virility.

Practically all the finds were those of 1928 from 30 sites, among which are Creswell Crags, Windmill Hill, The Trundle (Sussex), Woodhenge (Durrington, Wilts) illustrated by a scale-model, Meare Lake village, 'Old England' (Brentford), Lydney, Caerleon, Richborough, and the village settlement at Skara Brae. Ireland was represented by a model of the foundations of a house which probably formed part of the palace of the kings of Connacht, 2nd–3rd centuries A.D., and a Viking sword found in Ballinderry Bog, co. Westmeath, of about 840 A.D.

In order to show the development of the use of air-photography in surveying archaeological remains and sites a collection of air-photographs was also arranged. These included part of the Stonehenge Avenue, revealed for the first time by an air-photograph; Amesbury Down, showing a 'triple barrow' and 'Celtic' prehistoric fields; Maiden Castle; and a remarkable photograph of a Romano-British farmstead in Dorset, showing the field-system surrounding it. The catalogue points out that in the last no clearer record exists of the agricultural system characteristic of the country districts of Southern England, both in prehistoric and Roman times.

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We offer a humble apology to the Society of Antiquaries of London for failing to make the usual acknowledgements for the use of the plans illustrating Mr Peers' paper on 'Early Christian Churches in England' in the last number. These were all printed from electros of blocks illustrating papers by him in *Archaeologia* (vol. 77). The omission was entirely accidental and we much regret that it should have occurred.

Dykes

by Cyril Fox

DYKES have been described as travelling, running or linear earthworks. All these terms express their essential character, that of a bank, usually of earth but occasionally of loose stone, extending for a considerable distance across country. The existence of a bank presupposes an adjacent ditch from which its material was derived, and the descriptive term Ditch is as common as Dyke in the nomenclature of linear earthworks. Both terms have indeed a common origin.

Dykes vary greatly in structural character and in length; but however marked such differences may be, they possess at least one characteristic which permits them to be analyzed and discussed as a group; their ends rest on natural obstacles, and, where natural obstacles calculated to prevent the movement of men or animals occur in their course, they are discontinuous. Thus if they are political (tribal or racial) boundaries, they are present only in areas which men (and flocks and herds) inhabited or could inhabit, or across which they passed or could pass; if they are military works they exist only where passage to armed and organized bodies of men with their impedimenta was reasonably possible.[1]

It will be observed that the feature which characterizes dykes is equally applicable to the defences of promontory forts, whose ends rest on slopes difficult to scale, or inaccessible cliffs. Though borderline examples occur which might be classed either as defences of promontory forts or as linear earthworks, the distinction is clear. A dyke bars the approach to an extensive tract of country; the defences of a promontory fort protect a limited area—a few acres at most. It will be observed that the distinction is not an arbitrary one; in the one

[1] There are, of course, a number of minor banks and ditches to which the above definition does not apply. Some of these are probably the boundaries of prehistoric settlements; some delimit agricultural land from moor—or down—land; others define medieval parks, or coppices; such are not considered in this paper.

case the inhabitants of a district combine to delimit or protect their countryside, in the other a community provides defences for its settlement site, or constructs for itself a refuge. Different social organizations and concepts seem to be involved.

The essential feature of linear earthworks referred to above is in some cases immediately apparent, but in others it can only be elucidated after close and prolonged scrutiny; a few travelling earthworks in other respects typical fail to yield the necessary evidence: they end 'in the air'. These difficulties are mainly due to two causes: destruction by man the agriculturist, and changes wrought by the same agency in the character and aspect of the countryside.

These points may usefully be illustrated by reference to a well-known group of linear earthworks, the Cambridgeshire dykes, or ditches as they are locally called. The map (fig. 1) shows the series; the ditches are roughly parallel one to the other, the direction being NW–SE. They are four in number: (1) Bran Ditch (2) Brent Ditch (3) Fleam Ditch (4) Devil's Ditch.[2] All, it will be observed, at their NW ends rest on, or are close to, rivers—the Cam or its tributaries—but in respect of none is there any evidence on the ordinary map which provides a reason for the position of the SE termination.

A traveller proceeding south-eastward from the neighbourhood of Cambridge crosses a tract of upland of moderate elevation, some six miles wide; the country is very open, pastoral and agricultural, bare of villages. If he continues to walk in the same direction a slight change in character manifests itself; a plateau country some 300 feet above sea-level is reached, the fields are smaller, and hedgerow trees and woods more frequent. Hereabouts he will find that each of the Ditches has its westward termination: some fade away into a hedge bank, others, the Devil's Ditch in particular, end abruptly.

The changes observed by our traveller in the appearance of the country are determined by alterations in the soil and subsoil. The plateau is covered with glacial drift—boulder clay; the more open country has a chalk subsoil, and was originally down-land, though the ancient covering of chalk turf has nearly everywhere been destroyed. On the map the limits of the clay are outlined, the outline being based on the drift map of the Geological Survey. The presence of clay connotes oak forest and dense, brambly and thorny undergrowth,

[2] A fifth dyke, Black Ditches, to the north of the Devil's Ditch, should perhaps be regarded as part of the system (see p. 139).

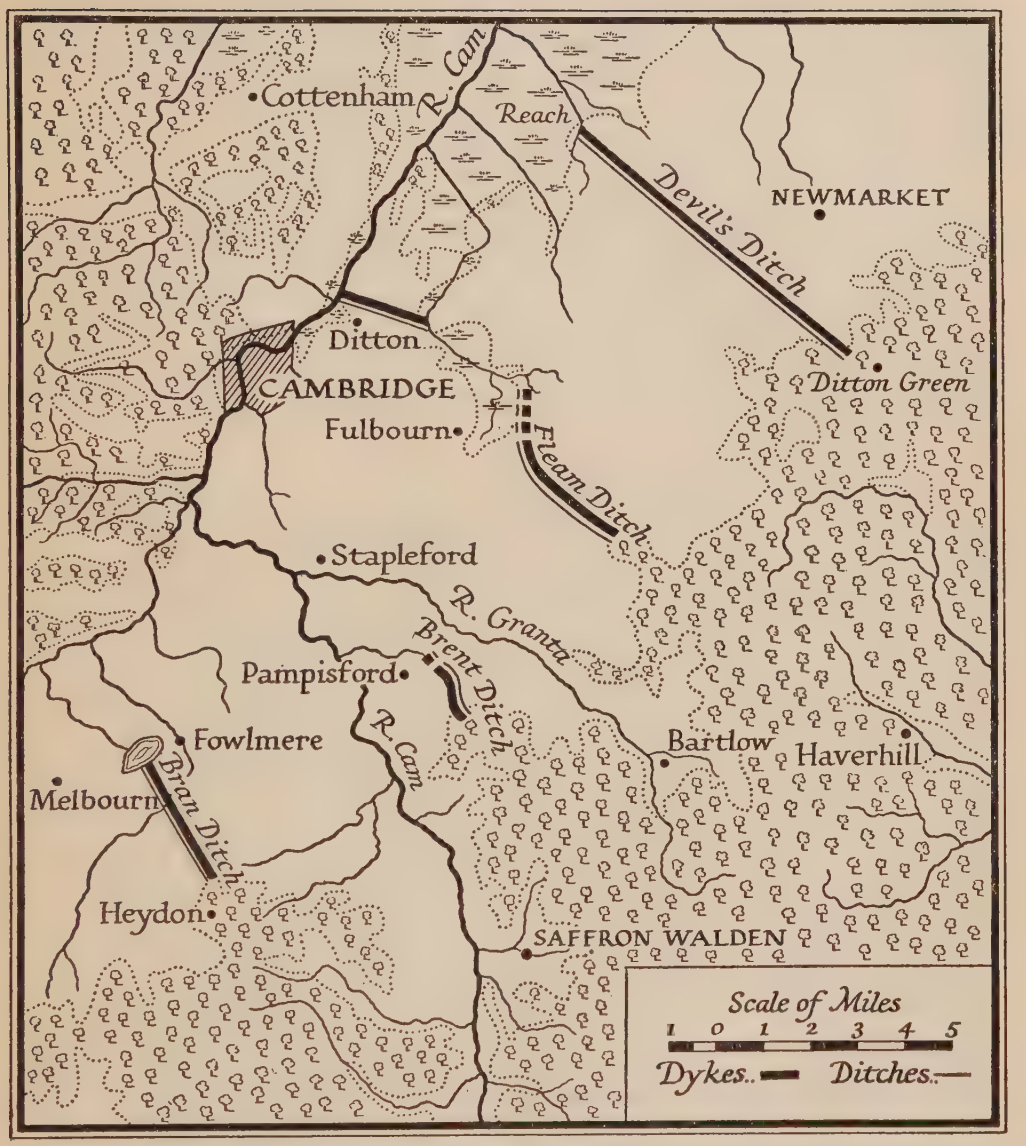


FIG. 1. THE CAMBRIDGESHIRE DYKES IN RELATION TO FOREST, FEN, RIVER AND DOWNLAND

practically impassable. If, now, the SE terminations of the ditches be examined on the map, it is seen that they coincide with the margins of the ancient forest. Each of the valley-ward terminations, moreover, if not actually resting on a river, is related to a definite water obstacle:— Bran Ditch ends in a mere, now drained; Brent Ditch in a marshy field whence a strong spring still flows.

Thus in the Cambridgeshire Ditches we have admirable examples of the essential character of travelling earthworks; they are barriers drawn across open country, from one natural obstacle to another. Reference has been made to the discontinuity of travelling earthworks where areas difficult for man to cross are on its line; the Fleam Ditch provides an example of this in the long gap between the two existing halves. This area, now pasture land, was in early times a mere, and its limits are clearly defined on the Geological Survey map by the peaty deposits which form its floor.

The special fascination which the linear earthwork has for the field worker is here revealed. The survey of a work of this class vividly brings home to the student a forgotten England; an island mainly covered by forest, whose valleys were swamps in which the rivers followed devious and changing courses. Belts of gravel by streams and rivers, sandy heaths, chalk down-lands, limestone ridges, and, in the west and north, the ancient rocks which form the mountainous backbone of the country, were either open or sparsely forested and suitable in great measure for man's dwelling places, his primitive agriculture, his traffic, and the sustenance of his flock and herds. Human activity in southern Britain was thus, geographically speaking, strictly limited, and movement was canalized—restricted for the most part to definite routes, the position and extent of which were determined by the geological structure of the country.

The greater Cambridgeshire Ditches, the Devil's and the Fleam, still dominate the landscapes they cross,[3] but others afford examples of the destruction wrought by agricultural operations, and reveal the means open to the archaeologist for the recovery of such when apparently lost. Parish boundaries fix the line of the Bran Ditch, which has been almost entirely flattened out; once the line is approximately known changes in the colour of the soil on the line of the bank, or a wave in the ground on the line of the ditch, serve to fix

[3] Apart from a doubtful extension of the Fleam, shown on the map by broken lines, recently revealed by air-photography.

its exact position. The complete elimination, indeed, of a large travelling earthwork has rarely if ever occurred. Sometimes a dyke, from its nature a well-drained ridge, forms a convenient grassy track or even a modern metalled road. In the latter case the persistent and strongly marked elevation of the metalling above the surface of the adjacent fields reveals the existence of the older work. The north-western end of the Fleam Ditch, between mere and river, has been put to use in this fashion. The Cambridgeshire series of dykes, so typical in most respects, provides one anomaly, an earthwork apparently ending 'in the air'. The earthwork known as the Black Ditches—which is sited on open heath country, some miles to the north of the main group—appears to terminate before any trace of the heavy clays of the plateau are reached, and I am uncertain whether it is destroyed or incomplete (see fig. 9).

All early fortification in earth presents a ditch facing the enemy with a bank on the inner side, this bank being constructed of material taken mainly from the ditch. Linear earthworks are usually of this character, and it may be taken as certain that whether a dyke be a political boundary or a military work, the main ditch faces the country-side foreign, or hostile, as the case might be, to the builders. Thus the ditches of Cambridgeshire, considered as a series, were built by a people living in Norfolk and north Suffolk as a boundary to separate them from, or as a barrier against, folk living to the south-west. The belt of chalk country between the fens and the forest which the ditches traverse is, indeed, as is well known, one of the more important prehistoric and early historic highways of Britain, providing a dry and well-drained route across open country from the Thames—and beyond—to Norfolk, and thus linking up the Salisbury Plain area, the one-time economic centre of southern Britain, with East Anglia. Many of the dykes of this country bestride traffic lines in a similar manner.

At some date within the dyke-building period or periods conditions in the Cambridge area were reversed, and the interesting little earthwork known as the Brent Ditch, aligned from marsh to forest where the chalk belt is narrowest, has its ditch on the opposite side, facing north ; and, as if to confirm this structure as the work of a people whose home country lay to the southward, the dyke is aligned along the crest of the slope overlooking a lateral valley of the Cam river-system, affording wide visual control of the downland to the northward.

Visual control was indeed, it would appear, of primary importance to the designers of linear earthworks. The writer is engaged, at the

moment, on the survey of Offa's Dyke, the greatest of all linear earthworks in Britain, reputed to cover the greater part of the distance of 120 miles separating the Dee estuary near Prestatyn in the north, from the junction of the Wye and Severn below Chepstow in the south. Its course is shown on a map (fig. 2); the survey for which I am responsible has, however, only been carried out from the Dee to the neighbourhood of Montgomery, and I hope to show that it is less incomplete in its southern half than it appears to be at present.

This great work is laid out with remarkable skill in country of varied relief, across lowland and highland, almost invariably in such a manner as to take advantage of westward-facing slopes; the ditch—with rare exceptions due to local conditions—is on the west side, and the structure clearly was designed by a man of military genius and exceptional engineering skill. Figs. 3 and 4 illustrate the selection and utilization of favourable ground by the makers of this earthwork, fig. 6 the profile of bank and ditch.

The greater dykes such as that of Offa present problems to the field archaeologist similar to those with which the student of the topography of Roman roads is faced, and call for a similar technique of elucidation. When the method by which the course of a dyke is laid out is grasped, one is in touch with the mind of the builder, and is armed with knowledge which is vitally important if the trace be temporarily lost, as not infrequently happens. Again and again in following Offa's Dyke from the Dee to Montgomeryshire, I have found that the builder adopted the same methods in dealing with obstacles of like type, and I was able to foresee, when studying (for example) a transverse valley ahead of the detailed survey of the dyke, what lines of approach would commend themselves to him. He always sought lateral re-entrants when crossing a broad valley, following the re-entrants down, or up, their western-facing slopes. The mode of utilization of rivers as the boundary when these are aligned approximately in the required direction, again, is identical in the valleys of the Dee (fig. 5) and of the Severn. In my opinion no method of dealing with the problem of the greater dykes, other than this, will enable us to determine whether they are the work of one mind, created as an entity for a given purpose, or whether they developed piece-meal and were linked up in the last phase of their evolution. I regard Offa's Dyke, so far as I have studied it, as the product of one mind and the work of one generation of men.

Another feature of great interest presented by linear earthworks

FIG. 2. OFFA'S DYKE: THE COURSE FROM THE ESTUARY OF THE DEE TO THE ESTUARY OF THE SEVERN. A SUBSIDIARY WORK, WAT'S DYKE, SW OF CHESTER, IS ALSO SHOWN

is direct alignment. It is to be expected that the builders should try to save labour by avoiding unnecessary bends and curves, but it is surprising to find with what skill dykes have been laid out on stretches of undulating or mountainous country, deviating but a few yards from absolute directness, for mile after mile. Fig. 5 is an example of this ; Offa's dyke in a 22-mile stretch across Denbighshire and Shropshire is laid out on three great alignments 8, 7½ and 12 miles in length, over hills up to a thousand feet in height and across deep trough valleys. On the northern, and the central, of these stretches the maximal deviations from the straight line are 280 yards and 300 yards. As will be seen from the map, the third stretch is equally direct, apart from a limited area where the extreme boldness of the relief necessitated wide detours.

In some cases alignment, from point to point, is absolutely direct. Of this directness the simplest and noblest example is afforded by the Devil's Ditch. Five miles of the ditch are in the same straight line, but each end is slightly deflected. If the ditch be studied on the ground it is observed that the 5-mile stretch is visible from either end, Gallows Hill and Stetchworth Hall, and could thus be accurately plotted. From the crest lines which terminated the main stretch, new and equally direct alignments were laid, on the one side to the fen, on the other side to the forest, approximately but not absolutely in line with the central portion of the work. Fig. 7 shows the change in direction on Gallows Hill, while the photograph (fig. 8), is taken from Gallows Hill looking westward towards the fen termination at Reach ; it shows the directness, and also the magnificent scale of the Ditch.[4] This enormous work, thus carried out with absolute precision, reminds one forcibly of Roman genius and Roman energy, and we are brought face to face with the question, what is the age of linear earthworks such as this ? Two possibilities present themselves ; either they belong to a variety of periods, being constructed at times when, cultural development having reached a certain standard, the occasion for great works of this class was manifest, or they represent the constructive activity of one period only, when dyke building was in fashion. The extent of the problem may briefly be referred to. In addition to the great systems already discussed, there is Wansdyke which, facing north, extends from near the Bristol Channel (Maesbury in Somerset) by Bath and Savernake Forest to Inkpen in Berkshire, a distance of 60 miles, and covers

[4] Hereabouts the scarp, from crest of rampart to floor of ditch, measures 60 feet.

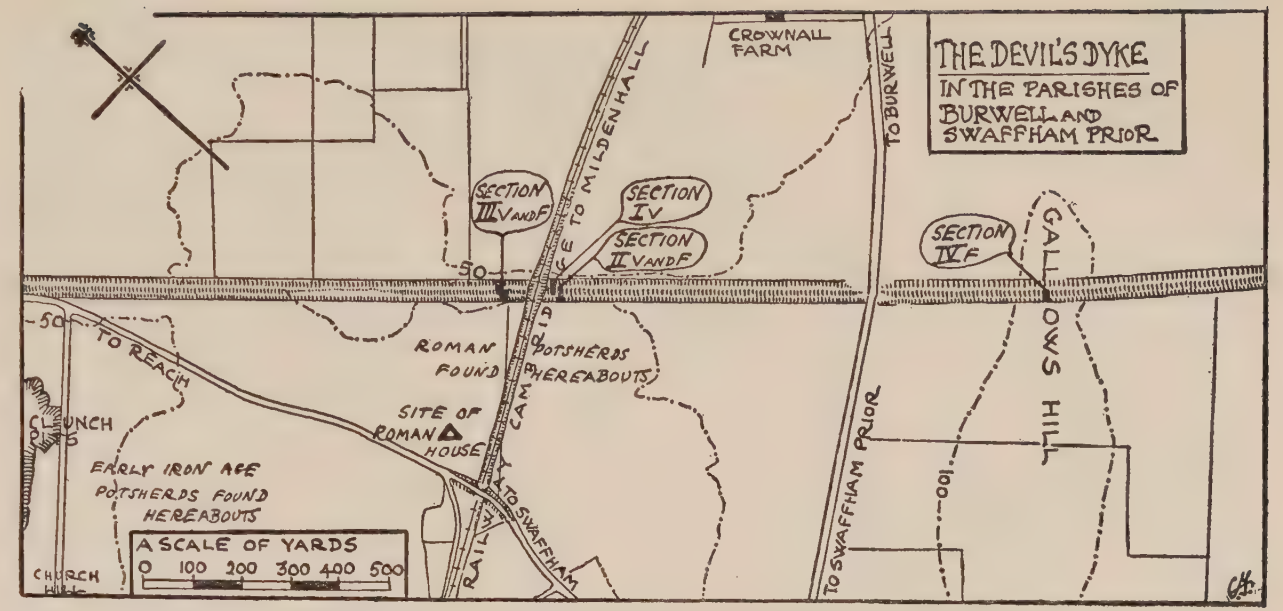


FIG. 7. DEVIL'S DYKE. MAP OF GALLOWS HILL SECTOR SHOWING CHANGE OF ALIGNMENT ON THE HILL TOP, AND SITES OF EXCAVATION

From the Cambridge Antiquarian Society's Communications

south-western Britain against attacks launched from the Cotswolds, the upper Thames valley and the Berkshire uplands. With Wansdyke, Bokerly Dyke, a much smaller work (4 miles long) on its eastern flank, is probably to be associated ; and it is relevant here to mention that Offa's Dyke has a parallel and apparently subsidiary construction, Wat's Dyke, at its northern end. North of the Cambridgeshire series, moreover, a pair of dykes barring access to extensive tracts environed by fen, and facing east, are to be seen. These latter are illustrated in fig. 9. In Cleveland, Yorkshire, on the Welsh borders in Montgomeryshire, Radnorshire and Shropshire (near Offa's Dyke), and in many other counties, are ramparts, usually short, called cross-ridge dykes ; these form barriers across ancient ridgeways, their terminals resting on ravines, steep slopes or the sources of streams on either side of the ridges. An example from Montgomeryshire is figured (9a). Grim's Dyke in Buckinghamshire, a work the extent of which is not yet fully explored, but which is at least 16 miles long, offers many problems, structural and functional. The Devil's Dyke near Andover, a shorter work, bestrides the Harroway ; while Comb Bank, Dorset, crosses the upland traffic routes between Dorchester and Blandford. In Ponter's Ball east of Glastonbury, and in New Ditch in Butleigh Wood, Somerset, fen to fen earthworks comparable in character with the East Anglian series are met with. The ends of Grim's Dyke, Oxfordshire, rest on a river ; it appears to extend from the Thames at Mongewell to the Thames at Henley, a distance of over 9 miles. These examples, selected mainly from the southern counties, illustrate the importance of linear earthworks to topographer and archaeologist, and their variety.[5] We have to deal with structures varying in length from a few hundred yards to well nigh a hundred miles. In size extreme differences occur, the smaller works being of the scale of a hedgebank, the larger, such as the Devil's Ditch, occupying a belt of ground over 40 yards across, and having even today after the wastage of centuries a rampart the crest of which is over 15 feet above the natural ground level, and 30 feet above the bottom of the ditch. The scale of this work is, perhaps, best brought home to a modern mind by the fact that the *breadth* of the area thus—for a distance of seven miles—transformed from a level flat into a high rampart and deep ditch, is equivalent to that of the widest of our new arterial roads, with its footpaths and grass verges.

[5] I am indebted to the Editor of ANTIQUITY for additions to my list. Those interested in the subject will find references to others in Allcroft's *Earthwork of England*, pp. 494–522.

Dykes differ in character as well as in size. Sometimes the bank is built up with material taken from both sides, more frequently the ditch is on one side only. They are usually single ; but some of the smaller (cross-ridge) dykes have double or even treble banks and ditches like the defences of a hill fort. Parallel banks facing outwards, enclosing and protecting a ribbon of land, or a trackway, are known to occur.

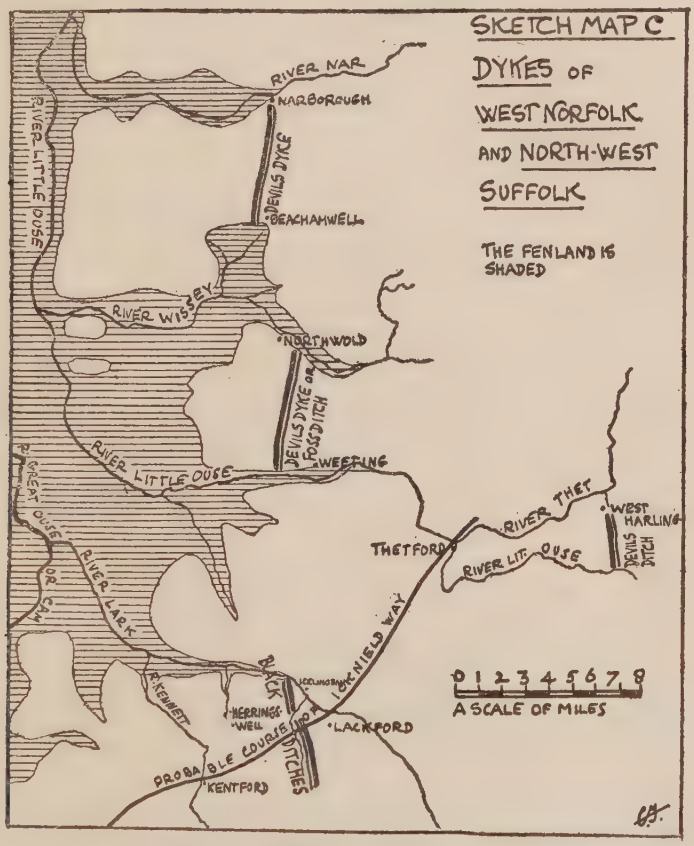


Fig. 9. THE DYKES OF WEST NORFOLK AND SUFFOLK
From 'Archaeology of the Cambridge Region'

Variations in scale and structure occur not only between one dyke and another but also in different parts of the same earthwork. Figs. 10 and 11, for example, represent profiles of Offa's Dyke. Fig. 10 shows the normal features of the earthwork, a high bank with a broad and deep ditch on the western side; such profiles are possible only on practically

level ground. Fig. 11 shows how the normal mode of construction was modified on steep slopes, the bank being constructed entirely from material taken from the upper (eastern) side. A double-ditched profile is shown on the same figure ; here Offa's Dyke crosses marshy

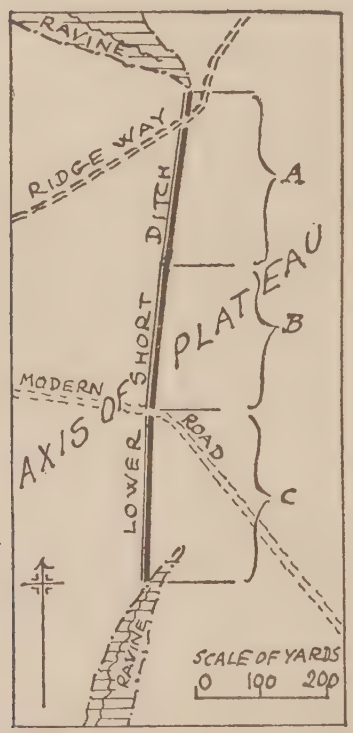
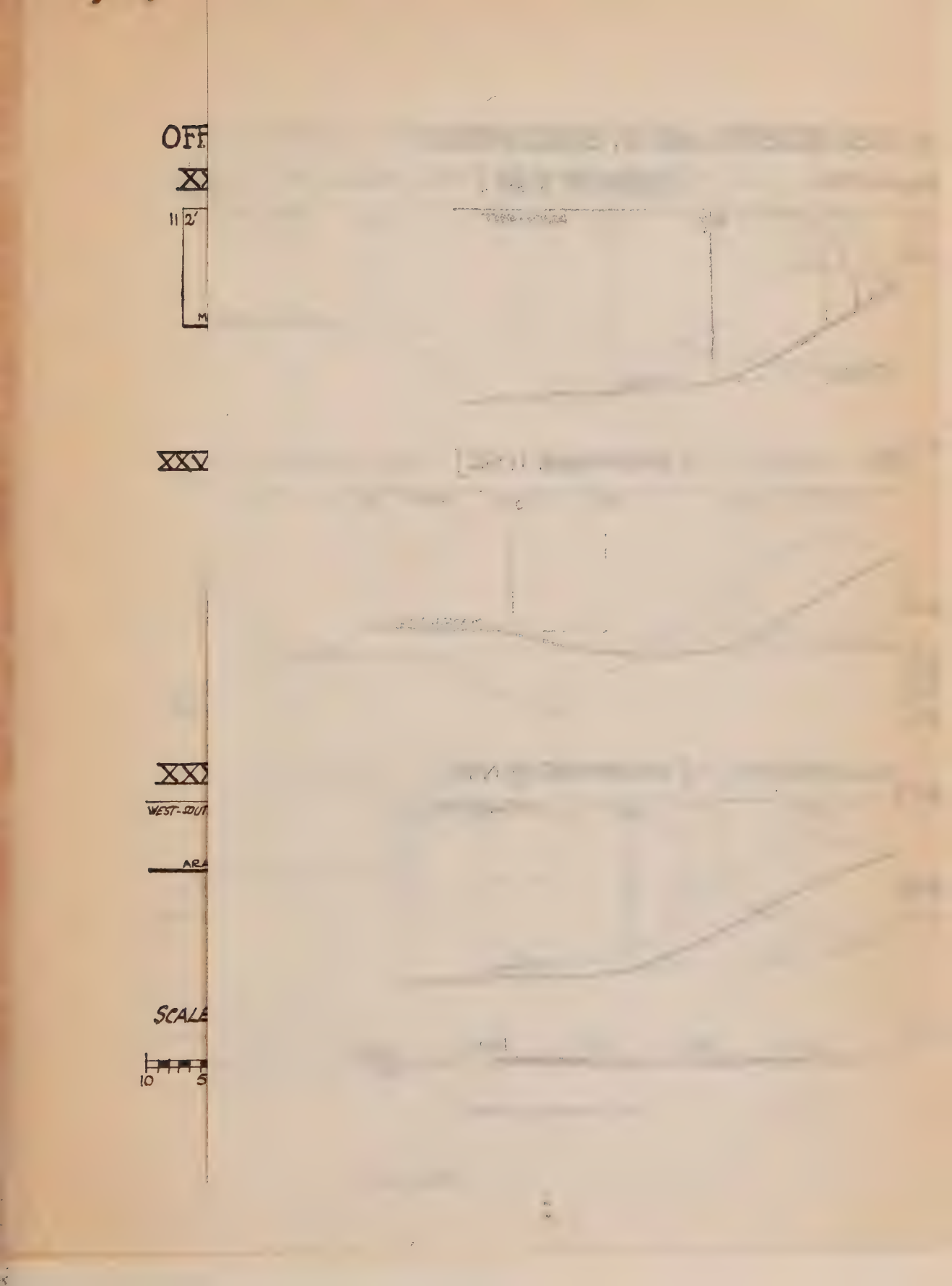


Fig. 9a. A CROSS-RIDGE DYKE: THE LOWER SHORT DITCH ACROSS THE KERRY HILL RIDGEWAY, MONTGOMERY. ALIGNED IN 3 STRAIGHT STRETCHES AS INDICATED BY THE LETTERS A B C

ground and it was doubtless difficult to obtain sufficient material from the wet land on the west side ; the men were probably working up to their waists in water. Much of the soil of which the bank is composed was taken, therefore, from the other side, and we have an earthwork symmetrical in profile.

To return to the question of date. The determination by excavation of the date of dykes and ditches is more difficult perhaps than in the case of any other class of earthwork, because their use was, in the nature of things, intermittent and probably of rare occurrence.


OFF
XX
11 2'
XXV
XXX
WEST-SOUT
ARA
SCALE
10 5

On some parts of Offa's Dyke it is possible that no man save shepherd and hunter trod for centuries after its construction, and human activity in relation to other dykes was confined in most cases, I suspect, to the crossing points—now difficult to identify.[6] Hence the chances of finding, by haphazard excavation of the ditch or bank, material traces of the culture of the builders, are remote. The problem was successfully tackled by Pitt-Rivers who, realizing the difficulties, concluded that the abundance of Roman remains in and near settlements of that period offered the best chance of arriving at an approximate date for linear

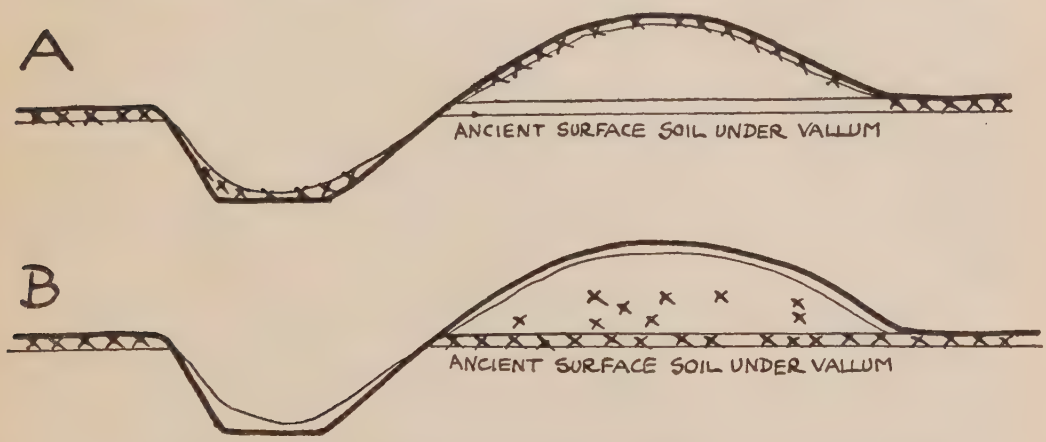


FIG. 12. DIAGRAM SHOWING THE THEORETICAL POSITION OF ROMAN OBJECTS [SHOWN BY XXX] IN RELATION TO (A) A PRE-ROMAN EARTHWORK, AND (B) A LATER EARTHWORK

earthworks. Such earthworks must be either pre-Roman, or later; and the relation between the rampart and ditch of such a dyke and the artefacts found therein and on the ribbon of ground which it traverses, ought to reveal its age to the careful investigator. The principle on which conclusions must be based is simplicity itself; a linear earthwork cannot be earlier than the date of the latest object found in or under its

[6] There is reason to suppose that the continuity of the Cambridgeshire ditches was unbroken by road-gaps. Travellers along the Icknield Way probably crossed, under surveillance, a wooden gangway. In the case of other dykes the differentiation between original and later crossing-points should be demonstrable by excavation; in respect to the original openings a causeway of undisturbed subsoil should be present on the line of the ditch; in the case of later gaps cut by road-maker or farmer, the ditch would be filled in—' made ground '.

rampart, provided that the rampart has not been disturbed since erection. The diagram (fig. 12) illustrates, by way of example, the theoretical position of Roman objects in relation to a pre-Roman and to a later earthwork respectively. If the dyke be pre-Roman, objects of Roman date may be expected to occur *in* the ditch and *on* (but not in or under) the rampart ; if of later construction, then Roman objects should be found, not *in* the ditch or *on* the rampart, but *in* the rampart and *in* the ancient surface soil thereunder.

Pitt-Rivers carried out excavations in Bokerly and Wansdyke, which are described in volume III of his *Excavations*. His section across Bokerly Dyke near Woodyates shows that the bank at the point excavated was constructed after the time of Claudius Gothicus, 269–270 A.D., while another undisturbed sector of the rampart yielded coins extending from Gallienus to Honorius. Thus the dyke hereabouts was built at the very end of, or later than, the Roman occupation. Sections through Wansdyke at similarly suitable points provided similarly cogent—though less precise—evidence of date, fragments of Samian pottery having been found in the ancient surface soil covered up by the rampart.

The writer, adopting Pitt-Rivers' methods, has attempted to determine the limiting dates of the other greater systems ; the Cambridgeshire ditches and Offa's Dyke. In Cambridgeshire the Fleam and the Devil's Ditches were chosen in succession for investigation ; the Fleam yielded Roman material under the undisturbed bank in two places, as well as interesting evidence that the construction of the work was intermitted for periods probably considerable (illustrated by fig. 13). The Devil's Ditch, examined in the neighbourhood of a Roman house, yielded numerous Roman sherds from various points in and under the rampart (fig. 15). The character of such finds is shown in fig. 14 ; they illustrate one important point in connexion with investigations of linear earthworks. It is that the intrinsic value of the finds thus laboriously obtained is likely to be nil. On the other hand, the historical value of these trifling fragments, in so far as they provide evidence of date, can hardly be over estimated.

When one considers how exhaustive an effort was involved in the construction, by a partially developed and imperfectly organized community, of such works, and how profoundly their presence must, for generations, have influenced the economic, military and political development of the communities whose boundaries they formed, one can realize how important it is, if we are to recreate the history of

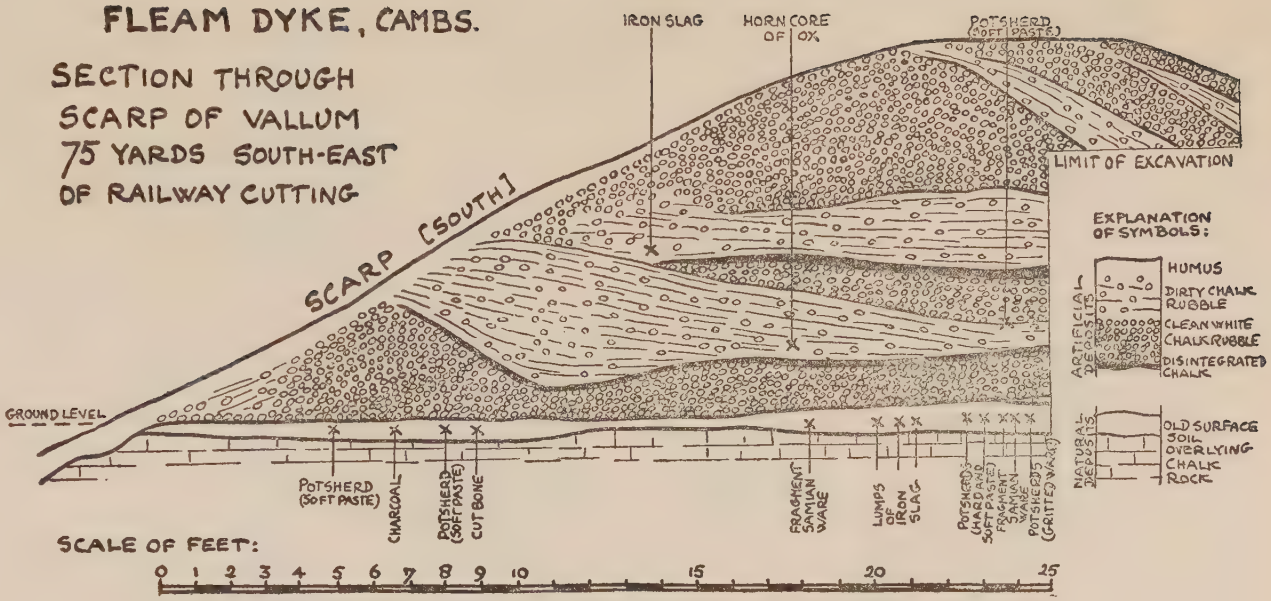


FIG. 13. FLEAM DYKE, CAMBS. SECTION THROUGH SCARP OF VALLUM

From the Cambridge Antiquarian Society's Communications

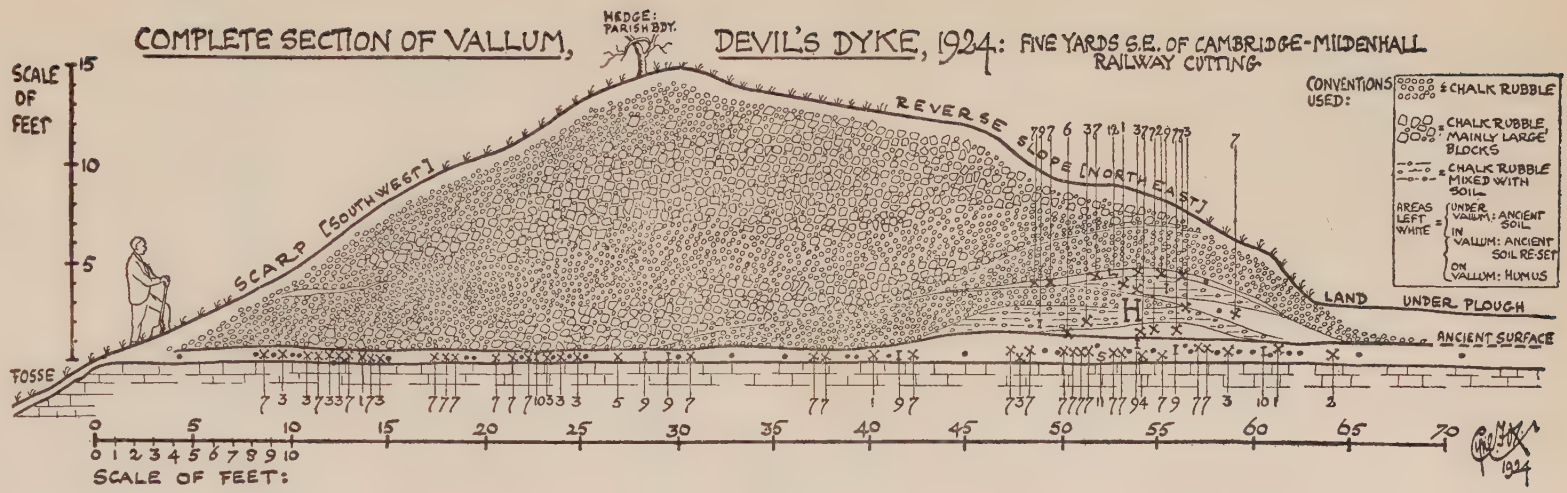
England in the periods when historical record is minimal or absent, to determine the period of their construction and use.

I next turned my attention to Offa's Dyke, which is attributed by Asser, King Alfred's bishop of Sherborne, a Welshman who wrote within a hundred years of Offa's death, to this great king of Mercia, who reigned from 757 to 796. Few points along its line are known to offer any likelihood of the finding of Roman remains in relation to the structure ; one of these points is Ffrith in Flintshire. Here a section made in 1926 showed that the bank of the dyke covered Roman material and contained Roman rubbish—potsherds, nails etc. (fig. 14).

Investigation of the three great dyke-systems thus proves that they are not, in the sections examined, pre-Roman. Offa's Dyke (so far as it has been studied), and the more important members of the Cambridgeshire series are certainly individually homogeneous, and in the case of each the date ascertained for any one portion may safely be regarded as the date of the whole work. There is nothing in the known history of the Roman period to justify the attribution of any of the three systems to the period of Roman rule. For their attribution to the Dark Ages we have direct evidence from two sources ; one the ascription of Offa's Dyke to the 8th century in a document of the 9th ; the other a recent excavation of Bran Ditch, Cambridgeshire, by Mr. T. C. Lethbridge, F.S.A., which has revealed under the remains of the bank Anglian burials presumably of the Pagan period, 450–650 A.D.* The date of Bokerly Dyke, it will have been observed, was by direct evidence pushed so close to the end of the Roman period as to make it practically certain that this also was a work of the Dark Ages.

Since then the greater dykes may be regarded as post-Roman, is it probable that all dykes in southern Britain are of this period? One widely prevalent detail of construction—direct alignment—tends to suggest this. There is a Roman character about such a mode, to which known work of the pre-Roman period offers no parallel. Thus I am inclined to believe that we shall ultimately arrive at the conclusion that practically the whole of our native dyke systems, large and small, belong to one period, and that the Dark Ages. We have only to consider for a moment the historical background to find a reason for this—a reason which emphasizes its probability. In north Britain there were erected by the Romans two barriers with sea-protected flanks, the Antonine Vallum and Hadrian's Wall. The existence of the latter at least must have been known to all dwellers in Roman

* Mr Lethbridge's report will appear in the *Camb. Antiq. Soc. Comm.*


COMPLETE SECTION OF VALLUM, DEVIL'S DYKE, 1924: FIVE YARDS S.E. OF CAMBRIDGE-MILDENHALL RAILWAY CUTTING
HEDGE: PARISH BDY.
SCALE OF FEET
SCARP [SOUTH WEST]
REVERSE SLOPE [NORTH EAST]
CONVENTIONS USED:
CHALK RUBBLE
CHALK RUBBLE, MAINLY LARGE BLOCKS
CHALK RUBBLE MIXED WITH SOIL
AREAS LEFT WHITE = UNDER VALLUM: ANCIENT SOIL; IN VALLUM: ANCIENT SOIL RE-SET; ON VALLUM: HUMUS
LAND UNDER PLOUGH
ANCIENT SURFACE
FOSSE
SCALE OF FEET:
1924

H : HUGHES BANK
X : POTTERY OF THE ROMAN AGE
• : POTTERY PROBABLY OR POSSIBLY OF THE ROMAN AGE
I : IRON OBJECTS
S : SHELL
L : LAVA

POTTERY:-[ROMAN AND ROMANO-BRITISH]
① CHIPS OF TERRA SIGILLATA (SAMIAN WARE)
② FRAGMENTS OF COLOUR-COATED WARE
③ " " CREAM-COLOURED WARE: MANY PROBABLY CASTOR WITH THE COATING RUBBED OFF
④ BASAL ANGLE OF A VESSEL OF HORNINGSEA WARE
⑤ RIM OF A DISH PROBABLY OF " "
⑥ BASAL ANGLE OF A VESSEL OF RED WARE WITH YELLOW SLIP
⑦ VARIOUS FRAGMENTS OF COARSE ROMANO-BRITISH WARES

IRON:-
⑧ NAILS
⑩ FRAGMENTS, THE MAJORITY PROBABLY OF NAILS

SHELL:-
⑪ OYSTER

LAVA:-
⑫

FIG. 15. DEVIL'S DYKE" SECTION THROUGH THE VALLUM
From the Cambridge Antiquarian Society's Communications

Britain, and since by its aid the native population was protected against the attacks of the northern tribes, it must have learnt to appreciate the value of such constructions. Again, the Germanic tribes on the Continent must have become familiar, through direct contact or tradition, with the *limes* between the Rhine and the Danube; and they themselves in the Augustan age created linear earthworks.[7] It is only to be expected, therefore, that this method of defence should have been utilized in England by Britons and by Saxons alike.

Boundary or defensive dykes are, in the nature of things, likely to be constructed by higher civilizations in contact with lower. They define the limits of law and order as against lawlessness and anarchy. Our greater dykes appear to afford excellent illustrations of this; in the south-west Romanized Britons, it is reasonable to suggest, attempted to secure the shattered elements of their civilization from the Saxon raiders by means of Wansdyke and Bokerly Dyke; in Cambridgeshire the East Anglians of the 7th century, comparatively civilized as a result of contact with the continental culture of the Franks, defended themselves against the still pagan and probably barbarous Mercians of the interior; in the west again, the Mercians, a century or two later, turned to protect the civilization which they by this time had gained or evolved, from the wild highlanders of the Welsh border.

The dominance of purely military ideas and requirements in the siting of dykes has been emphasized in this article; in their alignment considerations other than the dominant one seem normally to be in abeyance. There is, however, no doubt that in the past, when frontier lines were to be drawn, political considerations had weight. A curious instance occurs in the case of the Devil's Ditch. Before excavation was undertaken, I was working on the Early Iron Age in the Cambridge region, and in analysing the distribution of coins found that the countryside crossed by the dyke separated the Cambridge region into two districts in which coins of the Iceni on the one hand, and of the Catuvellauni and the southern tribes generally on the other, were commonly found.

The results were as follows:—

North of the Devil's Ditch: Iceni an coins 249, others 4.
South of the Devil's Ditch: Iceni an coins 6, others 180.

It is not surprising that the conclusion was drawn in 1922[8] that the dyke might be of pre-Roman origin designed to control and limit

[7] Tacitus, *Annals*, II. 19. [8] Fox, *Arch. Camb. Reg.*, p. 90.

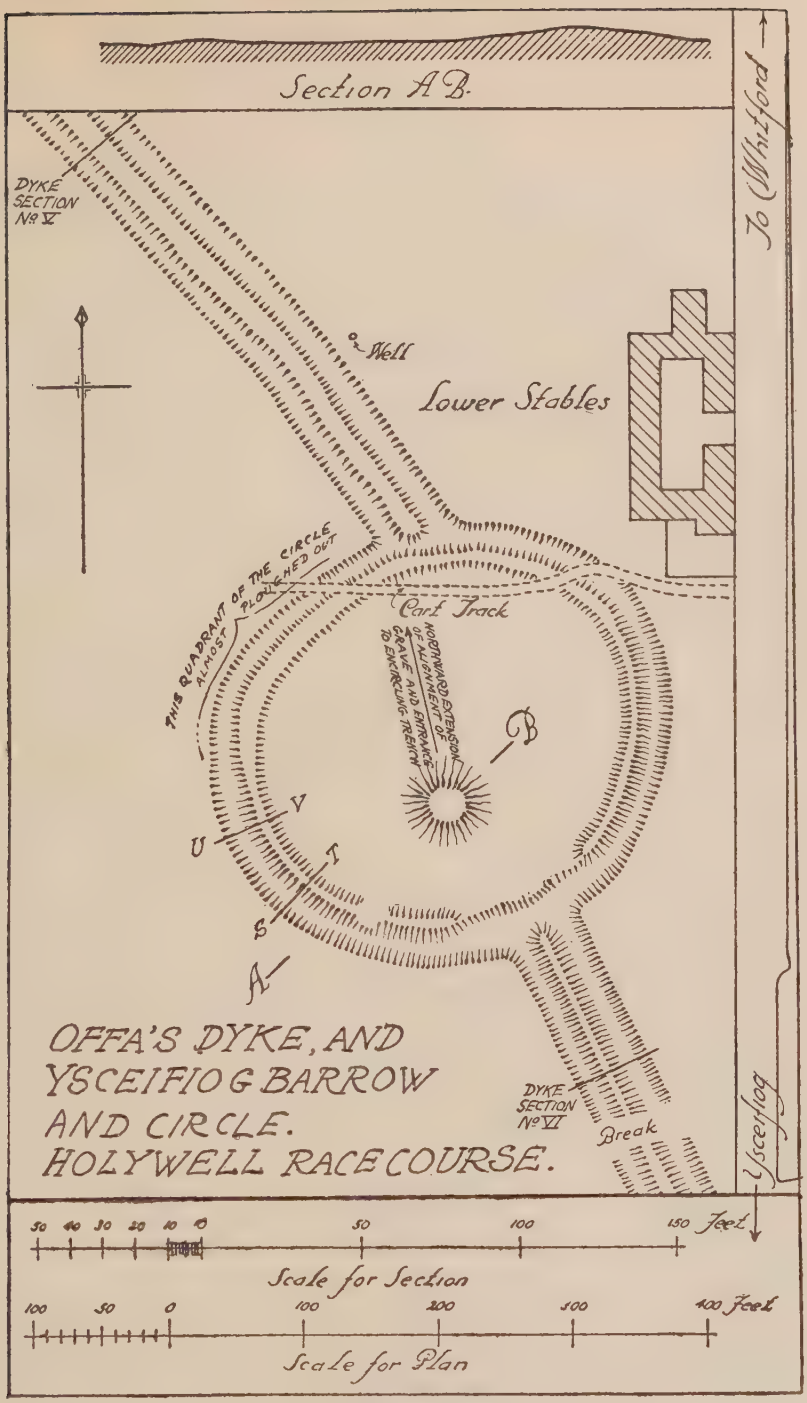


FIG. 16

From 'Archaeologia Cambrensis'

trade and intercourse between neighbouring Celtic tribes. It is now seen to be probable that the barrier when erected—presumably by the East Anglians of the 7th century—followed a political frontier of very old standing, the significance of which neither the Roman domination nor the Saxon conquest had destroyed.

In the case of Offa's Dyke again the exceptions to the rule that the alignment selected was, from the military point of view, favourable to the lowland power, are so outstanding that I was in last year's report[9] forced to the conclusion that ' the alignment of the dyke in general may not represent, as I have been disposed to hold, the free choice of a conquering race, but a boundary defined by treaty or by agreement between the men of the hills and the men of the lowlands. The latter, one would say, although clearly the dominant partners in the arrangement, did not have matters all their own way'. If, for example, the map (fig. 5) be referred to, it will be seen that the exclusion of the Y Gardden fort and the dominating spur on which it is situated must have been to the disadvantage of the builders of the dyke. Another example illustrating the influence of considerations other than military, of a very different order, is also provided by Offa's Dyke. In Flintshire the dyke is frequently aligned on tumuli which provide convenient sighting points in this somewhat featureless country. One such barrow, in Ysceifiog parish, is surrounded by a small, circular bank and ditch of very slight relief, at the edge of which the dyke stops short, commencing again on the other side (fig. 16). So similar and unexpected a break in the continuity of the earthwork suggested that the burial mound might be a contemporary construction with a sacred enclosure round it ; its investigation was evidently desirable. The barrow was completely excavated in 1926 and revealed a primary burial of the Early Bronze Age with a secondary cremation interment of the middle phase of the Age. Thus at a date some 2500 years later than the creation of this burial place and some 2000 years later than its last employment as a place of interment, the site seems to have possessed sanctity ; at all events the builders of Offa's Dyke, whether Mercians or Welshmen impressed as labourers for the task, did not trespass on the enclosure.

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[9] *Archaeologia Cambrensis* 1928, p. 103.

* The Editor desires to acknowledge the courtesy of the Cambrian Archaeological Association, the Cambridge Antiquarian Society, and the Cambridge University Press in lending blocks to illustrate this paper.

Rock Carvings in the Italian Alps

by M. C. Burkitt

MOST prehistorians are aware of the existence of a group of rock carvings depicting oxen, ploughs, etc., on the slopes around Monte Bego in the Italian Maritime Alps. As long ago as 1650 they were mentioned by the historian Gioffredo in his *History of the Maritime Alps*. Since then the only people of archaeological importance who appear to have paid visits to a certain few of the carvings were M. Rivière, in 1877, Professor Celesia in 1885, and Sr. Barocelli in recent years. It was, however, only when the late Clarence Bicknell, a keen botanist who lived at Bordighera, visited the Monte Bego district in search of alpine flowers and became interested in the carvings that a systematic study of them was commenced. For the best part of twenty years, from 1897 onwards, Bicknell worked on both sides of Monte Bego examining and taking rubbings of all the figures he could find. In all, something like 15,000 figures were thus studied, and for the purpose Bicknell built himself a house in the Val Casterino. This is a high, upland valley leading off the Miniera valley which is itself a side valley to the Upper Roya and runs up from San Dalmazzo di Tenda on the Franco-Italian frontier. The Casa Fontanalba, as he named the house, is beautifully situated just at the mouth of the Val Fontanalba, a narrow, steep valley running up from the Val Casterino to Monte Bego itself. The existence of the Casa as a base of operations made a careful study of the carvings possible, but even so they cannot be reached without a two to three hours walk and climb from the house—and it is uphill going all the way !

It will be well to try and describe the general situation of the carvings and then to discuss the figures themselves. A glance at the map will help. Let us imagine that we are climbing up the Fontanalba valley from the Casa and have halted about half way up for a rest. Directly in front rise the peaks of Monte Bego (pl. 1). They form a high jagged ridge, perpendicular on three sides but with an easy ascent up the southern shoulder, which completely hides from our view the Gran Capelet. On our left another precipitous ridge runs up to Monte

THE MONTE BEGO REGION
(Alpes Maritimes)
One Mile
½
1
Sites where rock-sculptures are found.....+
5°4'
5°2'
5°
4°58'
4°56'
44° 6'
44° 4'
V. di Valmasca
M. Paracueta
L. di Valmasca
M. S. Maria
V. di Fontanalba
V. di Casterino
M. Capelet
L. Verde
M. Bego
L. della Meraviglie
P. Arpeto
V. di Gordolasca
V. di Valauretta
San Dalmazzo di Tenda
V. d'Inferno
Laghi Luvighi
L. di Trem

Bego but is separated from it by the head of a narrow valley, the Val Valauretta, which leads down to the Miniera valley. On our right stands Monte Santa Maria, the ascent of which from this side is steep but easy. Between Monte Santa Maria and Monte Bego we see an immense cascade of sloping rocks descending to the Lago Verde in our valley ; they are like a vast wide glacier suddenly petrified. Their skyline is straight and flat and is the edge of a precipice down to the Val Basto on the other side. The rocky slopes of this ' cascade ', as I have called it, are fairly even and frequently highly coloured : yellow, orange or bright red ; they have been smoothed, sometimes almost polished, by ice action and it is here that we find a large number of the carvings. Most of the rocks are formed of hard schists, but there are also softer rocks that have, equally, been carved. Although many thousands of figures have been found, the extent of the coloured surfaces is so vast that the drawings must be searched for, except in one or two instances where a concentration of figures occurs, as for example on the so-called ' Three-hundred Rock ' and on the ' Red Rock of Santa Maria '. Apart from the carvings on the ' Central Mass ', a number have been found in the upper Fontanalba valley and on the slopes of Santa Maria, a few on the purple schist boulders of the Val Valauretta and of the Val d'Inferno, about twenty poorly-drawn figures on the Col Sabioni, and one or two at the head of the Val Basto. Finally there is a large and important group situated round the Lakes of the Marvels on the other side of Monte Bego (pl. III) and beyond in the Arpeto Pass which leads over the mountains towards the Gordolasca valley. It is thus obvious that Monte Bego is the centre of the art group as a whole, and, as will be seen, it is probably to Monte Bego that we must look for an explanation of its occurrence in this amazing situation.

Taken as a whole the carvings fall into three classes, namely those depicting (1) animals, (2) weapons and tools, and (3) signs, patterns, scenes, etc. The animals are almost entirely oxen; there may be a horse and there are a few beetle-like drawings, as well as some figures which appear to be meant for snakes. There are several representations of human beings, either alone (pl. IV) or in connexion with ploughing scenes. One of the most remarkable of the unassociated human figures is on a rock near the lower of the two Lakes of the Marvels (pl. V). It is known as the ' Chief of the Tribes ' and is an elaborate, symmetrical, probably symbolical drawing. The drawings are in all cases very conventional, the essential characteristics of the animals, such as the horns of the oxen, being enormously exaggerated. Sometimes, indeed, nothing else is

indicated. They are drawn as though seen from above. The resulting flattening out of an object is a not unnatural form of conventionalization, especially when the difficulties of working on such a substance as rock are taken into consideration. Certain figures, thought by Bicknell to represent skins, may only be further examples of this conventionalization of an animal form. We saw at least one charming group made up of ever-diminishing oxen, each drawn within the cup formed by the branching horns of the last.

The drawings of weapons, etc., are found to some extent in the Fontanalba valley and on the sloping rocks of the ' Central Mass ', but are especially concentrated on the other side of Monte Bego round the Lakes of the Marvels. The weapon most commonly figured is a triangular dagger with a handle. It is drawn sometimes point downwards, sometimes point upwards, as one or two nearly vertical rock-surfaces enabled one to demonstrate. There are also a few swords, one magnificent example clearly has a grooved handle. ' Halberds ' (pl. VI) too occur. These consist of triangular metal blades riveted at right angles on to long fine handles. It is just possible, having regard to the results of conventionalization, that these blades may sometimes have been attached to their handles in such a way as to have formed hoes. There are also one or two axes, perhaps also some sickles and a flail.

The signs, etc., include concentric circles, spirals, ladder-like and net-like figures, as well as figures that have been interpreted as plans of villages, farms, etc., showing houses with cattle enclosures joined by paths. Fanciful interpretations, however, leap only too easily to the mind. There are several delightful plough scenes in which a pair of yoked oxen with a plough between them are being driven by one or more men. In one case a third little man is leading the way in front, and in spite of the conventionalized treatment of the figures these little groups are extraordinarily vivid and display an unexpected and attractive degree of animation. Sometimes the oxen are drawing harrows (pl. VII) (or perhaps only sledges) not ploughs. Bicknell suggests that as many of these oxen are drawn as they would appear from above, probably the artists were actually able to see their originals feeding or ploughing in the valley below them. This can, however, hardly have been the case as only the lower half of the Fontanalba valley is at all suitable for agriculture, and any meadows there would not be visible from most of the sites where the carvings are found.

The technique of the carvings is notable. The figures have no outlines but are made up of quantities of punch- or pock-marks which

completely cover the surface (pl. II); the size of the pock-marks varies considerably in different figures and even sometimes in the same figure. For instance the body of the ' Chief of the Tribes ' is filled in coarsely with large pock-marks, while the fingers of both of his hands are carefully indicated by fine, tiny ' pockings '. I fancy a metal punch and mallet must have been used, the former being more or less cigar-shaped, sometimes fairly blunt and sometimes almost pointed at the end. Unfortunately no such punches or mallets have been found. Occasionally, as in the handles of one or two of the ' halberds ' that we noticed, when a long fine line is required it is made by a clean, straight, engraved cut (pl. VI), rather than, as is more usual, by a more or less narrow band of pock-marks. It is interesting in this connexion to notice how natural ice-scratches are utilized as far as possible. Outline drawings hardly occur, except in the case of ' farm ' scenes when pocked outlines often enclose series of dots or solid squares, etc.

Considering the vast extent of smooth, coloured, rock surface which was available for the carvings many cases of superpositions could not be hoped for. However we came across one interesting example on a yellow rock below the ' Great Red Rock of Santa Maria '. Here a dagger was carved over a ' farm ' scene, and, on comparing the patina and state of preservation of the rock surfaces of the two drawings, it was clear that that of the dagger was far fresher than that of the ' farm ' scene. Even where there were no such superpositions to corroborate one's impressions, but only juxtapositions of the figures, I thought the patination and weathering of the carvings indicated that the figures of animals, farms, etc., had been made as a rule at a rather earlier date than those of daggers and other weapons, which were presumably connected with warlike activities.

Three important questions have to be discussed. (1) Why were the carvings made ? (2) Who were their makers ? (3) To what date and culture should the art group as a whole be assigned ? One or two facts were very patent to the visitor. To begin with it was apparent that Monte Bego is an important cyclonic centre. Early in the afternoon at certain times of year the winds seem to be drawn towards it from all points of the compass, and clouds form around the summit, often accompanied by rain and thunder. During quite half our visit to the neighbourhood last July there was thunder round the mountain daily at about 3 p.m., preceded and followed by fine weather. The fact that Monte Bego and the Gran Capelet are among the first of the higher mountains inland from the hot Riviera probably accounts for these

phenomena ; but, be this as it may, it is clear that Monte Bego and the local weather are intimately connected together. That this fact is today recognized by the peasants of the neighbouring valleys is shown by the way the mountain is still used as a weather indicator by people living up to 50 miles away. 'That old devil Bego . . .' was an expression heard by Mr Berry in the course of a weather conversation near San Remo.

Significant, too, are the remains of extensive terracing which can be seen in the Val Casterino, etc., indicating that formerly agricultural operations were practised in these upland valleys on a far greater scale than they are today. The population has in recent years migrated largely, doubtless as the result of the growth in popularity of the Riviera and the rise of an extensive fruit-growing industry near that sunny coast. No doubt the higher valleys were always uninhabited and deserted in winter when the snows would make transport of any kind impracticable except on skis. But in summer, given sufficient rain at the right time, much more extensive hay and other crops must have been grown and harvested. Though some irrigation of the valley bottom and even of the lower terraces may have been possible, in general, suitable rains were essential both for crops and pasture-grass. Even last summer the hay crop in the diminished area of the Val Casterino that is now under cultivation was very poor owing to lack of rain at the right time in this particular valley. The Old Devil Bego had not come up to scratch.

Now all of us know of places where seasonal pilgrimages take place. In Roman Catholic countries these have usually been taken over by the Church and today consist of a procession of the local priests and people to some distant hill-top or shrine where Mass is celebrated and a general holiday afterwards follows. Doubtless these seasonal pilgrimages are far older than Christianity and were connected with some local demon or devil who had to be suitably invoked or propitiated. Just such pilgrimages must have taken place up the Fontanalba valley, over the Arpeto Pass, and up the Miniera valley. Why the rites then celebrated round the base of Monto Bego should have involved the carving of agricultural objects or scenes cannot be now definitely stated, though obviously the artists were depicting symbols of all that was vital to their livelihood. How do any particular ritual acts originate ? Possibly the first carvings were idly made, merely an expression of the thoughts that were uppermost in the carver's mind and later their production crystallized into an act in a yearly ceremony. As I have said,

the style of the drawings in the various groups is not identical and sometimes more than one age can be made out. At the same time there is a remarkable similarity in general appearance throughout and the conventions for making such an object as a plough with yoked oxen persist. This is just what one would expect. Once the cult and attendant rites had grown up the innate conservatism of its devotees would ensure similarity, especially if, as I have suggested, the carvings were connected with seasonal pilgrimages intended to secure suitable rains.[1]

That the first and principal object of the cult was connected with agriculture and cattle is suggested by the preponderating number of oxen and agricultural objects figured. But if many of the carvings of weapons belong to a slightly more recent date, it may well be that, though originally the precincts of Monte Bego were visited by farmers because the mountain was obviously connected with the rain supply and must therefore be propitiated, gradually a tradition of sanctity became attached to the neighbourhood of the mountain itself and to the act of carving these symbols of things for which a blessing was desired; so that to the farmer's drawings of cattle were added the warrior's pictures of his weapons which perhaps may be said to have been 'consecrated' by the same sort of ceremony as we have postulated for the cattle pictures. In this connexion the so-called Altar Rock near the lower Marvel Lake must have been especially important. It is an immense gable-shaped rock surmounted by a smaller skull-like boulder, and one of its slopes is covered by hundreds of carvings of weapons and tools of all sorts.

In passing it is worth noting that it is only the bright red rocks which catch the eye that have been engraved, not the countless ordinary grey ones which abound; also that they occur at the ends of the several valleys leading up to Monte Bego just where one would expect local folk to wend their ways for the yearly pilgrimages. Undoubtedly it is an awe-inspiring region, specially when thunder and clouds encircle the mountain and one is lost in one of the many boulder-strewn, often mist-enveloped, gulleys at the foot of the mountain. Undoubtedly too, the odd, brightly-coloured rock surfaces add to the mystery of the neighbourhood.

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[1] One must not, of course, forget the possibility of a second autumnal pilgrimage, corresponding to our harvest-home festivals.

We now come to the second question, who were the makers of the carvings? It will be obvious from what has just been said that there seems no reason to postulate a world-wide cult of Monte Bego. It was probably a very local affair concerning solely the inhabitants of the valleys close by. I doubt whether anyone outside a radius of 50 miles from the mountain took much interest in what went on round its base. Possibly a stray outsider sometimes took part in the rites, but it was a Covadongas rather than a Lourdes. How many of my readers have ever heard of Covadongas? Yet in Asturias this sacred cave and spring is a great place of pilgrimage today—a little Lourdes. No, the rock-carvings around Monte Bego were made by the local folk who passed their summers in the neighbouring valleys, wintering, perhaps, just in the plain of Piedmont at the foot of the Tenda hills. Probably the cult grew up quite quickly at first, existed for a time—perhaps a couple of centuries or so—and then slowly dwindled to nothing, though the carving of names in Christian and recent times may indicate a memory of the sacredness of the locality persisting till our own times. The fact that the cult was a local one perhaps explains the absence of carvings in the Valmasca. This valley is throughout stony and unsuitable for crops and the folk in the Val Casterino would naturally take the shortest route to the foot of Monte Bego, namely up the Fontanalba valley. The one or two poor carvings on the Col Sabioni may have been made by some chance family which came over that pass and for some reason left their mark while en route for the real sacred areas.

Finally a word or two is needed in regard to the date and culture to which the art groups should be assigned. With the exception of the study of the carvings practically no archaeological work has been undertaken in the region. The early inhabitants are classed as *Ligures* and there the matter is left. Who the Ligures were remains obscure and hardly anything is known of the archaeology of the Ligurian Alps in the Bronze or Early Iron Age. Along the Riviera a number of Palaeolithic and Neolithic sites have been investigated, but it must be remembered that the Riviera is an easy corridor from East to West and life there must have been quite agreeable. Penetration inland, however, up beyond the then almost impassable gorges of the Roya must have been more than difficult. Indeed in Palaeolithic times the whole region must have been covered with snow and uninhabitable. The Brenner Pass appears to have been traversed for the first time in the Copper Age, and personally I doubt whether the Monte Bego district could have been really habitable before that period. Possibly New

Stone Age folk may have visited the Val Casterino and similar valleys, but so far no traces of them have been found. The Bronze users penetrated into Italy from the north and occupied the Swiss and Italian lakes where they succeeded the Neolithic people. Judging from the types of weapons which are carved on the slopes of Monte Bego there must have been users of Early Bronze Age types of tools in the Maritime Alps. I am inclined to question, however, whether the carvings can be correlated *in time* with the Bronze Age dwellings of the Italian lakes.

In this connexion I feel that the present state of the carvings themselves cannot be neglected. During the winter months they are under snow and are therefore protected, but every year in spring and again in autumn there are long periods of warm days alternating with frosty nights which are especially destructive to rock surfaces. Again there is the rain to be thought of. One afternoon while under Monte Bego we were caught by a storm. I have seldom experienced such a deluge, and it was illuminating actually to see the way the water rushed down the smooth sloping rocks in streams with terrific force. The rocks of the central mass are formed of a hard schist, but even there the surface is peeling away ; while at the great Red Rock of Santa Maria much of the rock is rotten. Elsewhere, as at the Via Sacra, the rock itself is soft and can be scratched with such a blunt tool as a key. The climate in past ages was certainly no kindlier and at times must have been even damper than it is today. It is therefore difficult to believe that the carvings can be enormously old, when one considers how destructive are the climatic forces of nature which they have had to withstand.

I fancy the true explanation of the circumstances may have been somewhat as follows. The Neolithic folk living around the headwaters of the river Po and its tributaries, although not on the main track of Bronze Age migration into Italy, may have been influenced by oncoming waves of early Bronze users. Assimilating the new methods of tool-making, etc., they may have continued to flourish in their own region for some time before they pushed their ' colonies ' up into the mountain valleys around Monte Bego. Our area would thus have been a sort of double backwater.

The Early Iron Age folk who might have disturbed the rock artists do not seem to have penetrated into these mountains—so far no trace of their activities has been discovered—and it can be presumed with a certain degree of probability that successive generations of the population continued to live in the same manner as their fathers had done before them—that is to say using bronze tools. It must be remembered, too,

that for such semi-religious rites as we have postulated custom would compel the use of old-fashioned tools even if they had become out of date for ordinary purposes, in which connexion one might instance the frequent use of a stone tool among metal users to kill a sacrificial victim.

On the other hand the absence of any Christian symbol from among the carvings shows that, to however late a date we may ascribe them, they must have been made before Christianity had arrived in the district, that is to say in all probability before the third or fourth century A.D.

The following points emerge from these considerations :

(1) That there is no evidence that has survived for any extensive habitation of the district before the period of the carvings themselves.

(2) That, *culturally*, all the carvings can be assigned to the Bronze Age, doubtless connected with that culture which flourished round the Italian lakes.

(3) That there is no necessity to correlate them in time with the industries of the lake dwellings.

(4) That all the carvings are not of the same age.

(5) That there is reason to assign a date for their production prior to say 300 A.D., when Christianity penetrated the district.

(6) That we are dealing with a series of rock-carvings drawn, in the first instance, during seasonal pilgrimages to Monte Bego by the inhabitants of the neighbouring valleys who were hoping to obtain from the occult powers of the mountain propitious weather for their herds and crops and, later perhaps, blessings for their arms and weapons.

Does a more recent dating and the localizing of the cult detract from the interest of these mountain carvings ? By no means : the opposite is in fact the case. Hardly anything is known of this interesting region of the Maritime Alps, and if it has acted as a sort of museum where an early culture has survived longer than elsewhere we can but be exceedingly grateful for the information that has thereby been preserved for us.

BIBLIOGRAPHICAL NOTE : Those who wish to study further this interesting art group should consult *A Guide to the Prehistoric Rock Engravings in the Italian Maritime Alps*, by C. BICKNELL, printed at Bordighera in 1913. This work will be found in many libraries though unfortunately it is now nearly out of print. Later papers on the subject are :—' Val Meraviglie e Fontanalba ' (Società Piemontese di Archeologia e Belle-Arti. Turin, 1921), by PIERO BAROCELLI, and ' Le incisione rupestri di Tenda' (Bolletino Storico Bibliographico subalpino. Turin, 1926), by C. F. SAVIO.

The Lynchet Groups of Upper Wharfedale, Yorkshire

by A. Raistrick and S. E. Chapman

THE area considered in this study is roughly the drainage of the Wharfe and its tributary the Skirfare, above Burnsall, a typical 'Yorkshire Dale'. The valley is excavated through the Yoredale series of alternating limestones, shales, and sandstones, into the Great Scar Limestone, the lowest member of the Carboniferous series. This lower limestone forms very imposing and massive scars along the valley sides, above which the fells rise in a series of steps and scars corresponding with the limestone and sandstone outcrops. The valley bottom is occupied by a series of glacial lake flats and moraines which have played a very important part in the settlement of the valley, the lake flats being swamp until recently drained, and still liable to flood through a great part of winter, the moraines providing dry crossing places and village sites throughout the upper dale. The dale under discussion is about 20 miles long, and from ¼ to ½ mile wide between the lower scars of limestone. The valley floor rises from 500 ft. above sea-level at Burnsall to 1250 ft. at the head of the valley near Oughtershaw, while the top of the first scar varies from 800 ft. to about 1600 ft., being a platform of good pasture about a third of a mile wide, on each side of the valley.

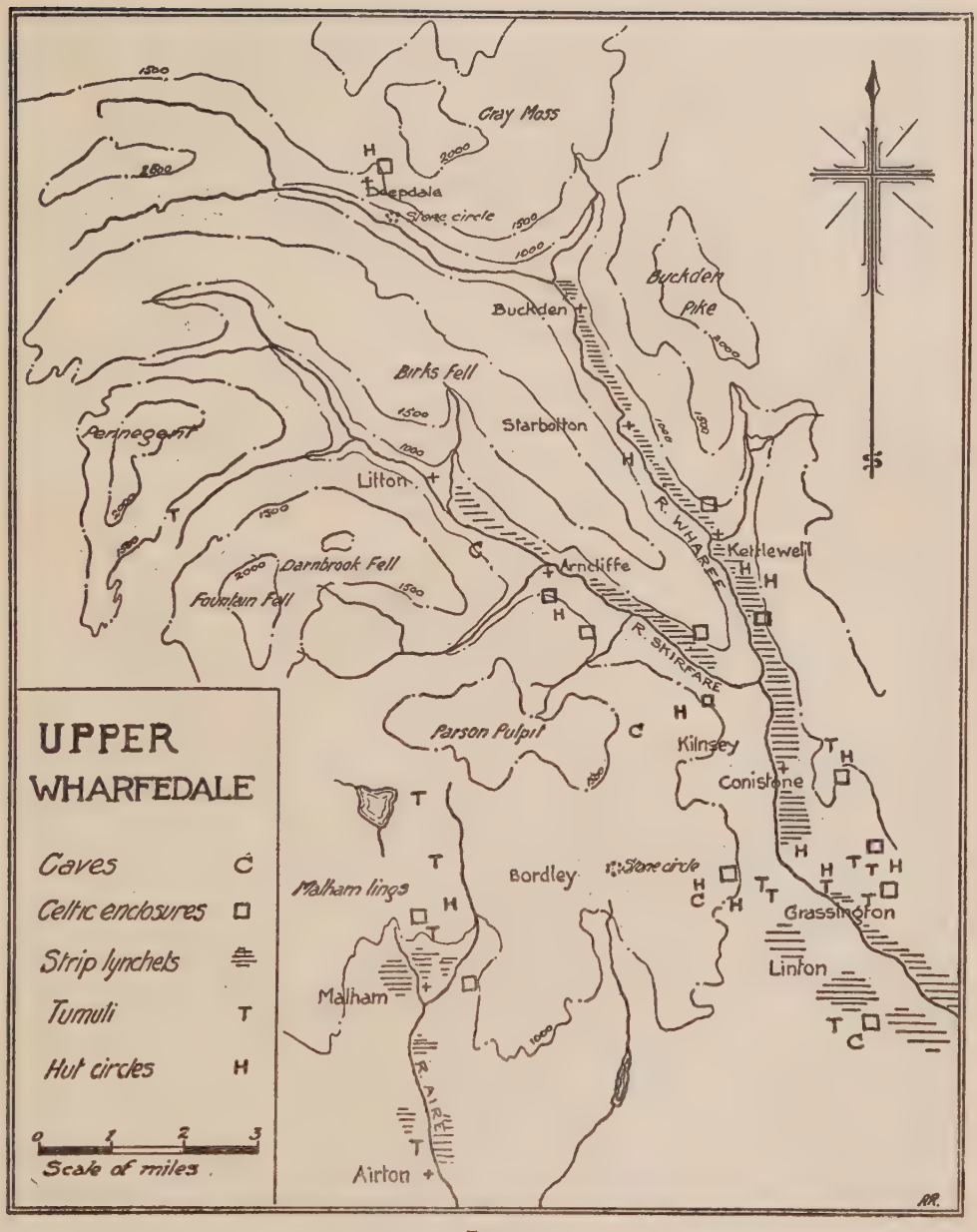
The area has been the scene of continuous human occupation from early Neolithic times in the caves of the Great Scar Limestone. Only two of these caves need mention in this paper, Elbolton cave (Navvy Noddle Hole) at Thorpe, near Grassington, and Dowkerbottom cave near Kilnsey. The excavation of the deposits in these caves has been described,[1] but no systematic account of their occupation in relation to the rest of the dale has appeared. The deposits have yielded a very large fauna of Arctic animals, followed by a fauna the chief member of

[1] *Repts. Brit. Assoc.* 1890–2, and 1894.
Procs. Yorks. Geol. Soc. (1881), VII, pt. 4; (1892), XII, pt. 2.

which is the brown bear (*Ursus arctos*), and the reindeer (*Rangifer tarandus*). In the upper parts of the cave-earth carrying these animals, *Bos longifrons*, goats, sheep, and birds become common, and in the uppermost earth of Elbolton, human remains are associated with domestic cattle, sheep, goats, etc., and with crude pottery of Neolithic type. In Dowkerbottom cave, the human remains extend from this period through the Bronze Age, are prolific in the Iron Age, and present through the Romano-British period. These remains give a complete picture of the life of the cave dwellers, their hunting and pastoral habits, industries, art, etc., and form a scale of reference for the remains of the dale, found in more isolated sites, outside the caves.

On the scar of the Scar Limestone, barrows of many types are numerous. The earliest type is represented by a group near Netherside Hall, Threshfield, and one at Thorpe, the mounds being of small diameter (average 20 ft.) and high (about 8 ft.). The barrows of this type that have been opened have yielded skeletons associated with 'beaker' type urns, flint flakes and implements, and occasional bronze ornaments,[2] and are of Bronze Age. A second type of barrow is found over the plateau of the Scar Limestone, associated with earthworks of the 'Celtic Lynchet' type. This type of barrow is much greater in diameter (up to 90 ft.), and very low, a circular barrow, in some cases surrounded by a ditch or bank, often saucer shaped. These have yielded a large selection of iron knives, coarse pottery, and articles of bronze and iron for ornament, and are usually the site of multiple burials. They are of Iron Age. The Celtic lynchets associated with them have been noted at Grassington by Dr E. Curwen (ANTIQUITY, June 1928, pp. 168–72), but are otherwise entirely undescribed. In the map (fig. 1) we record twelve sites of such lynchets in upper Wharfedale, and have examined well over 40 sites in various parts of Yorkshire and Derbyshire, and in all the larger sites find, associated with the lynchets, groups of hut circles. In Wharfedale, the huts are rarely built in close proximity to the field sites, but are scattered over a small attractive area within a few hundred yards of the main fields. At Grassington the hut circles occur in large numbers in Grass Wood, adjoining the High Close Pasture on the west (fig. 2) and at the north end of Lea Green, about 500 yards from the High Close Pasture camp. Although it has not yet been possible to carry out extensive excavation

[2] It is hoped to describe these various barrows, caves, etc. in detail in a subsequent paper.


UPPER
WHARFEDALE
Caves C
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Grey Mass
Stone circle
Buckden
Buckden Pike
Birks Fell
Starbotton
Penigent
Litton
Darnbrook Fell
Fodstain Fell
Arncliffe
R. WHARFE
Kettlewell
R. SKIRFARE
Parson Pulpit
Kilnsey
Conistone
Malham Tarn
Bordley
Grassington
Linton
Malham
R. AIRE
Airton

Fig. 1

on all these sites, small trials have been made on the more important, and careful plans have been made of all. On most of the sites fragments of pottery and other remains have been obtained which show their correspondence in date with the largest group at Grassington. For general description and plan of these remains, we would refer to the excellent note by Dr Eliot Curwen, in ANTIQUITY, June 1928, but would note that in many of the sites higher in the dale the earth banks are replaced by massive walls of inferior masonry, and in the site near Malham, Airedale, by megalithic walls (plate II).

The principal remains excavated from the lynchets have come from the irregular areas near the centre of the southern group at Grassington, and from the barrows and hut circles closely associated with the various groups. The pottery that is common over the area is

(1) coarse thick grey ware, lathe turned, with well moulded rims.

(2) coarse black ware, hand moulded and occasionally inscribed with straight line patterns.

(3) thin red ware, pseudo-samian, and terra-sigillata.

1 and 2 are common in the hut circles and barrows as well as in some parts of the lynchets, while 3 is limited so far to the enclosures marked B and E on Dr Curwen's plan, and to the kitchen-midden associated with the largest group of hut circles at the south end of Grass Wood. (Fig. 2).

Iron knives, many hafted with deer horn, and small articles, nails, ornaments, and articles of indeterminate use are common both in huts, barrows, and lynchets, both of iron and bronze. Spindle whorls of stone and pottery were excavated from the hut circles of Lea Green and Grass Wood, and from the Grass Wood huts a whorl of cast lead, well ornamented, was obtained. Loom-weights of stone and of earthenware accompany the spindle-whorls, and prove the existence of some textile working during the occupation of these camps. Hand-querns of saddle type, and pounding and rubbing stones, along with the charred remains of barley in the floor-clay of one of the huts prove the semi-agricultural habits of the lynchet people. (Fig. 3).

The remains then, from the rectangular lynchets may be summarized as follows :—From the earlier of the barrows, which occur among or adjacent to the Celtic fields, the ornaments, tools, and pottery date from the Early Iron Age. The pottery of the hut circles, also found in the fields, dates from late La Tène to Roman, and is associated with spindle-whorls, loom-weights, and saddle-querns. The

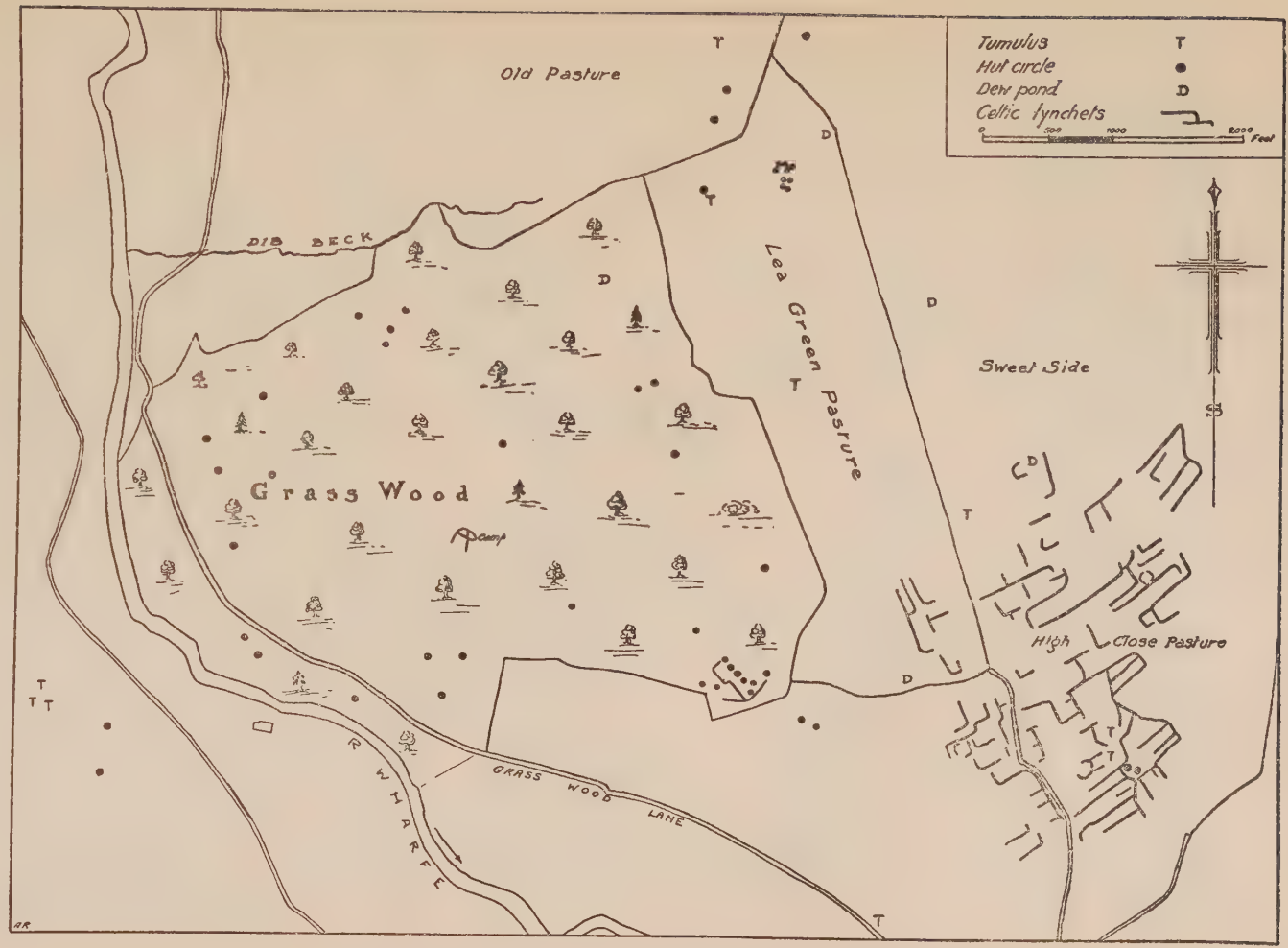

FIG. 2. CELTIC LYNCHETS AND HUT CIRCLES NEAR GRASSINGTON

cast lead spindle-whorl is of Roman type. Pseudo-Samian ware has been obtained from the lynchets near Grassington, Linton, Kettlewell, and at Hawkeswick (at the mouth of the Skirfare valley). (Fig. 1).

The plan and general appearance of the lynchets at Grassington are typical of most of the sites in Wharfedale, but in the Skirfare valley (Littondale) a group of enclosures of exceptional character deserve description. The enclosures lie on the broad limestone plateau formed

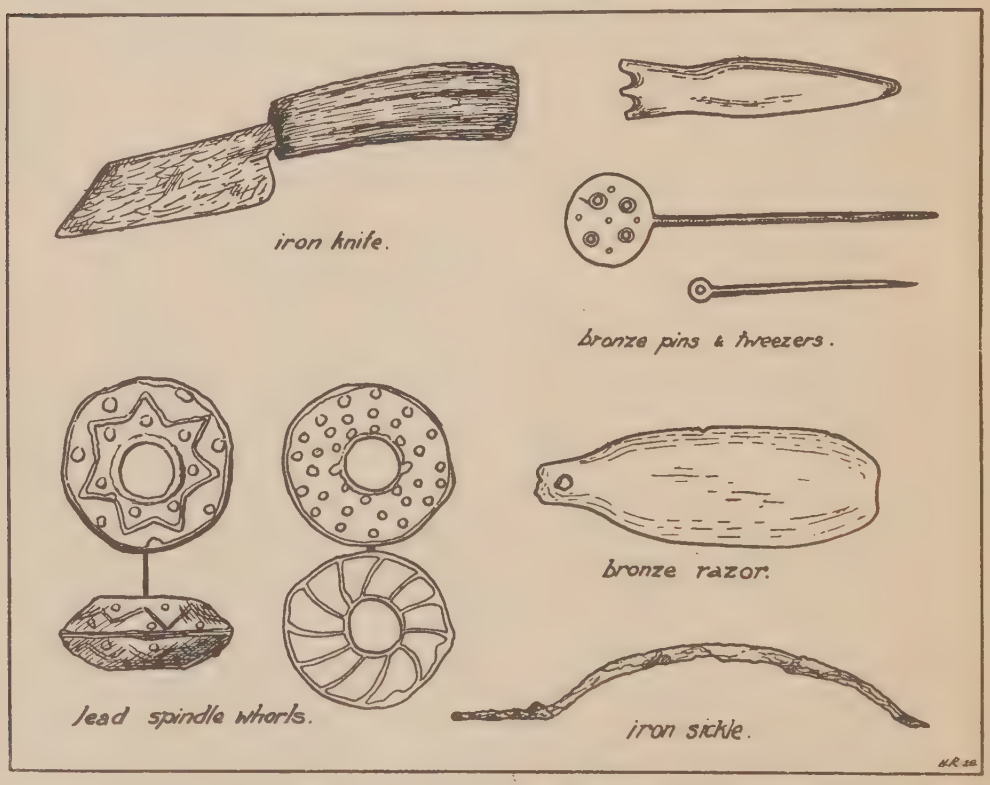

Fig. 3. METAL OBJECTS FROM HUT CIRCLES AND LYNCHETS, GRASSINGTON

by the top of the Great Scar Limestone, immediately south of the village of Arncliffe, at about 1050 feet above sea-level, and are formed by rough masonry walls, 5 feet broad at the base, mostly fallen, but in parts still 3 feet high. The plan is unusually regular, and consists of two large areas the smaller of which is surrounded by small compartments, one of circular plan with sufficient wall still standing to show the bee-hive structure of it (fig. 4). The enclosure with the dwellings is

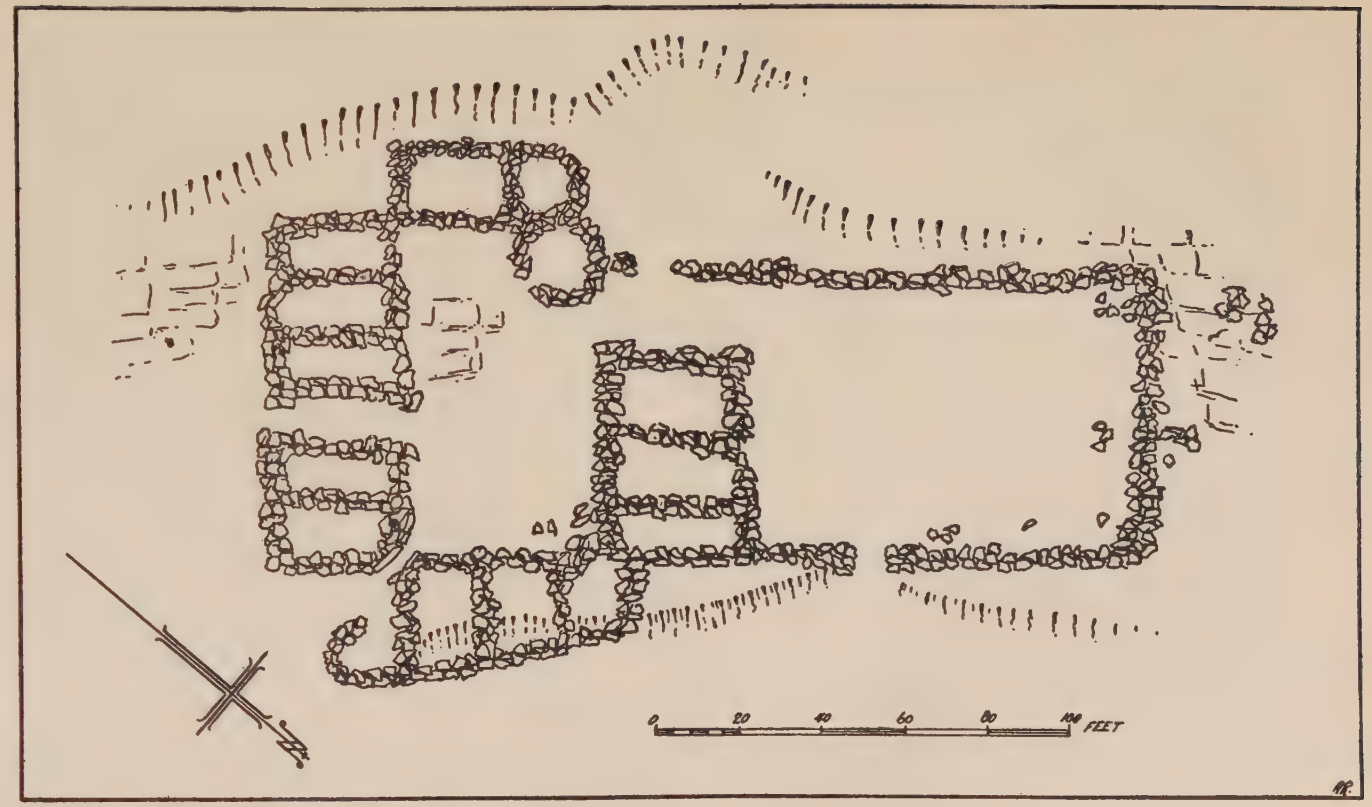

Fig. 4. STONE ENCLOSURES, BLUE SCAR, ARNCLIFFE

rectangular, 50 feet by 80 feet, with two well made entrances. In the middle of the south side an entrance passage runs between the chambers and is 10 feet wide by 30 feet long, with well made walls, the two ends of the passage being narrowed down to 5 feet by very massive buttresses. The other is a narrow entrance in the SE corner, flanked by large standing stones and passing cornerwise between the chambers on the south and east. The east wall of the enclosures runs on the top of a low limestone scar, and the chambers on this side are formed by very broad walls running down the slope of the scar to a wall along the foot. On the south side there are five chambers averaging 30 feet by 12 feet, on the east side three, and on the north three. On the west there are two rectangular chambers and, built out into the central area, a third which is circular and shows part of its bee-hive structure. Between this circular chamber and the third on the north side is a passage-way into the northern enclosure, which is rectangular, 60 feet by 90 feet, with an entrance near the middle of the east side. (See the plan, fig. 4). Along the east side runs a sunken green road, connecting this group of walls with other enclosures of the normal type previously described, and alongside the road there are remains of two dew-ponds, a feature of all the Celtic lynchet groups. Around this building there is a large area of normal rectangular enclosures, made with the usual earth bank, topped or cored with large boulders, extending for half a mile along the edge of the plateau. The area of a great part of these larger enclosures is now entirely 'clint' i.e. weathered limestone pavement with deep open joints, but the walls can be seen running across the clints, and at many places falling into recently uncovered clints. The soil of the plateau is in process of removal, following the baring of the limestone surface, due to wind and rain action. It is certain that the large enclosures were built when the limestone was still soil-covered and grassed. Going from the edge of the scar towards the chambered area, the bare clints are left for thinly soiled enclosures, then further back the soil and turf is quite thick and springy. No excavations have yet been made in this structure, but it is linked with the rest of the Celtic lynchets by its green sunken road and dew-ponds, and is part of the much larger group of Celtic fields, now partly on clint limestone. From careful field examination, and from the evidence of its position and associations, we would suggest a late Iron Age date for its occupation, as a small settlement attached to the large areas of Celtic lynchets around it. It is certainly an advance on the isolated hut circles, but has a parallel in the group of hutments within a rectangular wall on

Lea Green, Grassington. The nature of the Malham megalithic lynchets will be seen from the photograph (pl. II).

We wish now to draw attention to another feature of the dale, that is the strip lynchets. On passing through any of the West Yorkshire dales, a traveller must be impressed by the existence on every slope in the lower ground of the valley, of ranks of terraces, a few yards wide and generally a few hundred yards long, rising one above the other in much of the land now enclosed in small fields. In 1877 Canon Greenwell[3] noticed terraces of ' peculiar construction . . . throughout large and various districts of Britain', and suggested they were the remains of some system of cultivation of cereal crops. Referring to Craven he says :—' There are abundant examples of these peculiar terraces which, found on the slopes of hill-sides, were at one time supposed to mark ancient levels of water but which are, notwithstanding, clearly of artificial origin '.

Throughout upper Wharfedale, the land between the alluvial flats and the base of the scar formed by the Great Scar Limestone, on the north east side of the valley, is occupied by such terraces. Many of the terraces are parallel with the contours, but in some places they run at right angles to the contour lines, apparently governed by the nature of the ground ; practically everywhere they are independent of present field boundaries. They vary in size and extent but as a rule they are about 15 yards wide by from 200 to 400 yards long, though some examples reach 800 yards. The varying lengths are due to the hilly form of the ground, which prevents perfect regularity.

Each terrace has a steep face along the front, and a levelled top. The steep face often shows signs of a rough masonry filling of boulders, laid fairly regularly in the soil, not so much a true retaining wall as a reinforced turf bank. In all the dale-sites this rough facing is present in the higher terraces, while at a few places, as Lawkland and Rathmell, there is a true wall of squared masonry to the front of the terrace. The constancy of this masonry filling prohibits the belief that the terraces can have originated merely by ploughing the land in one direction only, and consequently always turning the sod downhill, and so forming in time a terrace, as has so frequently been suggested in the south of England, but is conclusive evidence that the terraces were constructed of deliberate purpose. If a pair of horses with the typical dales sled, still used for peat and bracken carrying, is watched

[3] *British Barrows*, p. 374.

on sloping ground, it will be seen at once that when the horses pull in any way but directly up or down a slope, the sled makes considerable side travel while being pulled, and the resultant line of movement is a curved line. This would occur in attempting to plough along sloping ground, and therefore in order to keep straight furrows, and also for ease of the team in ploughing, a plough must either have a level bench along which to run, or must pull directly across contours. These conditions are provided by the strip lynchets which, on sloping ground, are made stable and permanent by the facing of masonry. A well known group of terraces in Scotland are of this masonry walled type. Sir Laurence Gomme[4] quotes Mr Chambers as saying of the terraces around Dunsapie:—'It is quite evident that they have been carefully formed with a facing of wall composed of rough blocks and the faces of some of them are so well defined and steep that it is barely possible to climb them'. This has been verified by the authors in most of the northern counties as well as in Scotland. The average slope of the Wharfedale examples is between 30 and 50 degrees, and so agrees with the above description.

These lynchets have been mapped on the Ordnance maps of 6 inches to 1 mile scale, which allows of the mapping of each separate terrace, and the completed maps show some interesting results and groupings, not anticipated at the outset of the work. The lynchets have been mapped throughout Yorkshire, Westmorland, parts of Cumberland, Durham, and Northumberland where they occur, and in the few places in Lancashire and Derbyshire where they can be seen. The upper dales of the Aire and Wharfe, however, are quite typical of the whole area, and the discussion of a single parish in each, where the lynchets are still complete, will give an adequate idea of the general arrangement. For this purpose the parish of Conistone with Kilnsey in Wharfedale, and Malham in Airedale, will serve very well.

Conistone lies on the east side of the Wharfe and extends from the river to the watershed between the Wharfe and the upper tributaries of the Nidd, including a variety of land from the low lying alluvial flats on the river side at 600 feet above sea-level, to the rough moors of the Pennine summits at 1800 feet to 2250 feet. The land lies in three roughly parallel strips, the good pasture (once arable) land below the first limestone scar, a broad belt of high limestone pasture above that scar and below the heather line, and the heather moors on the Millstone

[4] *The Village Community*, 1890, p. 89.

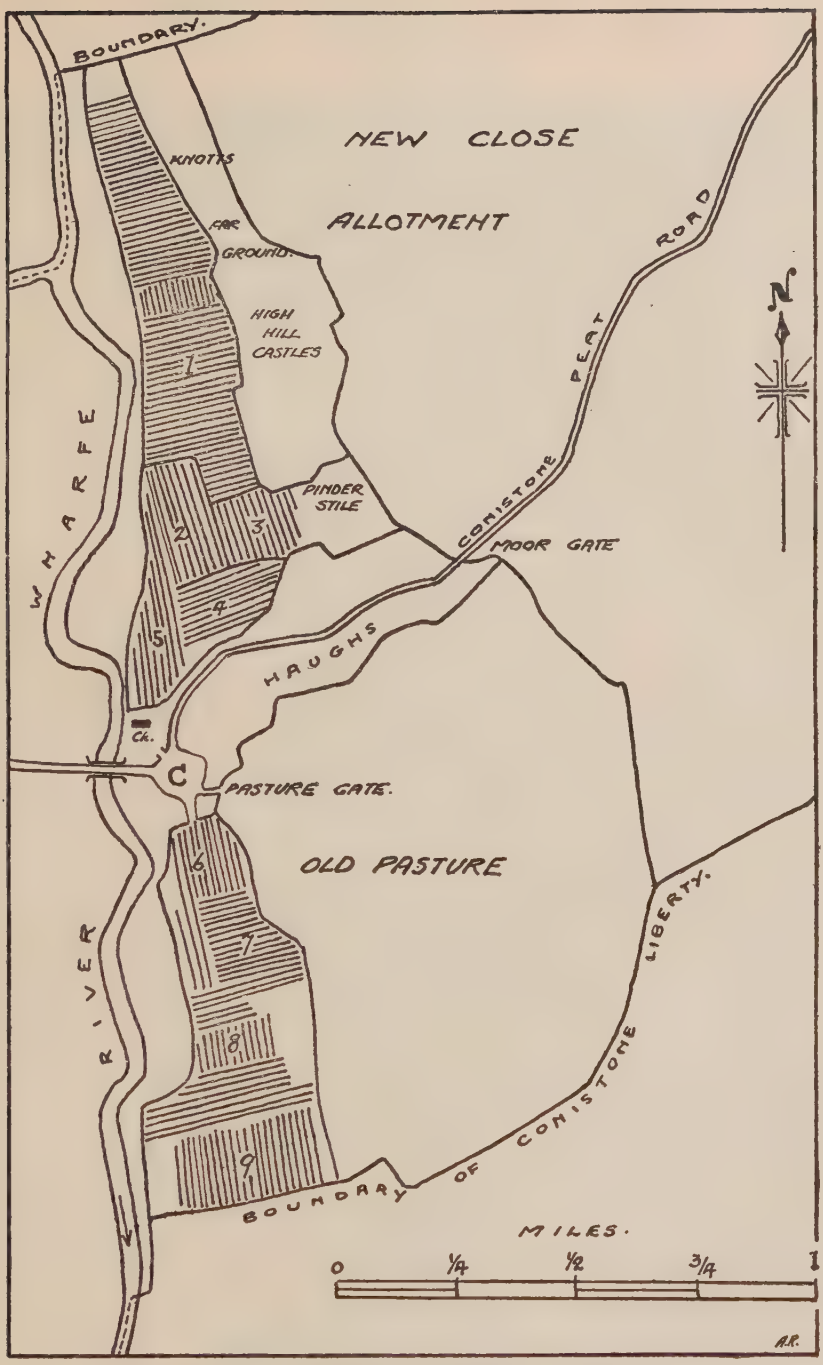

Fig. 5. STRIP LYNCHETS OF CONISTONE VILLAGE

Grit which caps the Pennines in this part. On the west side of the river Kilnsey is a very similar area though it has a greater proportion of upland limestone pasture at 900 feet to 1100 feet than that east of the river.

Though Cunestone and Chileseie are both included in the Domesday Survey, both places are of much earlier origin, the present mapping in its relation to the field names indicating a Saxon township.[5] While there are numerous remains of Neolithic, Iron and Bronze Ages, in this parish, none have occurred on the site of the terraced fields or village. Reference to the Ordnance map* will show that near the present village and on land occupied by terraces, the following names persist in a long strip parallel to the river, but above the alluvial flat ; from north to south they are—North Flats, Long Rigg, Short Butts, Haughs Flats, Long Field Ings and Kirk Ings. South of the village they continue, Close Garth, Town End Croft, Ings Close, Cow Pasture, and Dolly Flats. Between this strip and the foot of the scar lies a belt of pastures with the following names, again from north to south—Knotts, Far Ground, High Hill Castles, Great Meadow, Pinder Stile, and Moor Gate Pasture. South of the village the whole area up to and on top of the scar is here called the Old Pasture. In the centre of the village is a narrow paved way and foot gate to the corner of this big pasture, called Pasture Gate. From the village an old lane runs between the the Pinder Stile and Moorgate Pasture, to the Moor Gate and there enters upon the open moor and becomes Conistone Old Peat Road, crossing the new close allotments (1801 inclosure award) to the Conistone peat allotment on the flank of Great Whernside.

It will be seen from the Ordnance map* that the names of the first belt relate entirely to the groups of lynchets, each name pertaining to a single group, and no group being unnamed, although in the modern fields only about one in five carries a distinctive name, or is named from its present or recent owners. Further, each group of lynchets is surrounded by traces of a fence unusual in this part of the country. The present fields are all enclosed by stone walls of two enclosure periods, 16th or early 19th centuries, but around the lynchets there are long lengths and occasionally complete boundaries formed by a shallow ditch, a high bank of earth and rocks, and a row of trees, usually thorn or blackthorn, on top of the bank. The continuous lines on the map are such boundaries or 'baulks'.

[5] Saxon is used as a cultural, not racial term in this paper.

* 1852 edition.

Across the river, in Kilnsey, there are no terraces, there being much less land between the scar and the river, and the land being darkened by the high crags that rise to the south of it. At Kilnsey the famous Kilnsey Crag rises 200 feet with an overhang, straight out of the alluvium, leaving no room for fields. The top of the crag however affords the best pasturage in the district, and the field names witness its utility in the lynchet period. The great natural divisions of the irregular land have the following names. High Ox Pasture, Low Ox Pasture, Out Gang Hill, Pinder Fold, etc. All these names, on both sides the river, reflect the village constitution of Saxon times. The Pinder, as the community flock-policeman, would of necessity have this special fold (Pinfold) in which to impound stray cattle, and such stock as was in excess of sheep gates, cattle-gates, etc. allotted to the village, and in the dales villages this fold is preserved either as the Pinfold, Pound, or Pindercroft, etc. Examples are still retained at Buckden, Starbotton, Kettlewell, Conistone, Hawkeswick, and other places. The High and Low Ox pastures are self explanatory when we remember that oxen were the principal draught beasts of the period, and from these pastures as well as other parts of the parish numerous ox shoes of various ages have been turned up. In the Conistone fields, the Short Butts are of interest, not because they are the site of the local archery ground—according to many local antiquaries—but because the name is clearly of Saxon origin. In the medieval manuscripts, etc., we find frequent references to 'Butts' as the place where two sets of plough lands meet at right angles[6] and we preserve the same word in 'abut' and 'abutment'. It will be seen from the map that the 'Short Butts' are at right angles to the 'Long Rigg'.

When the valley villages are examined, remains of Saxon age are numerous, but nothing earlier, except occasional flint flakes, is found on the lower fields. We may say in general that the pre-Saxon occupants kept to the high ground of the valley sides, avoiding the boggy valley bottoms. It is possible of course that the early terrace cultivation has removed all traces of earlier occupation in the area it covers, but this is not likely. In one or two cases where the terraces have approached an older camp on the borders of the cultivated ground it is noticeable that the terraces sedulously avoid the older work, terminating before reaching the earthworks, and not even abutting against them. This state of things is in close agreement with the findings of

[6] F. Seebohm, *English Village Community*, 1890, p. 6.

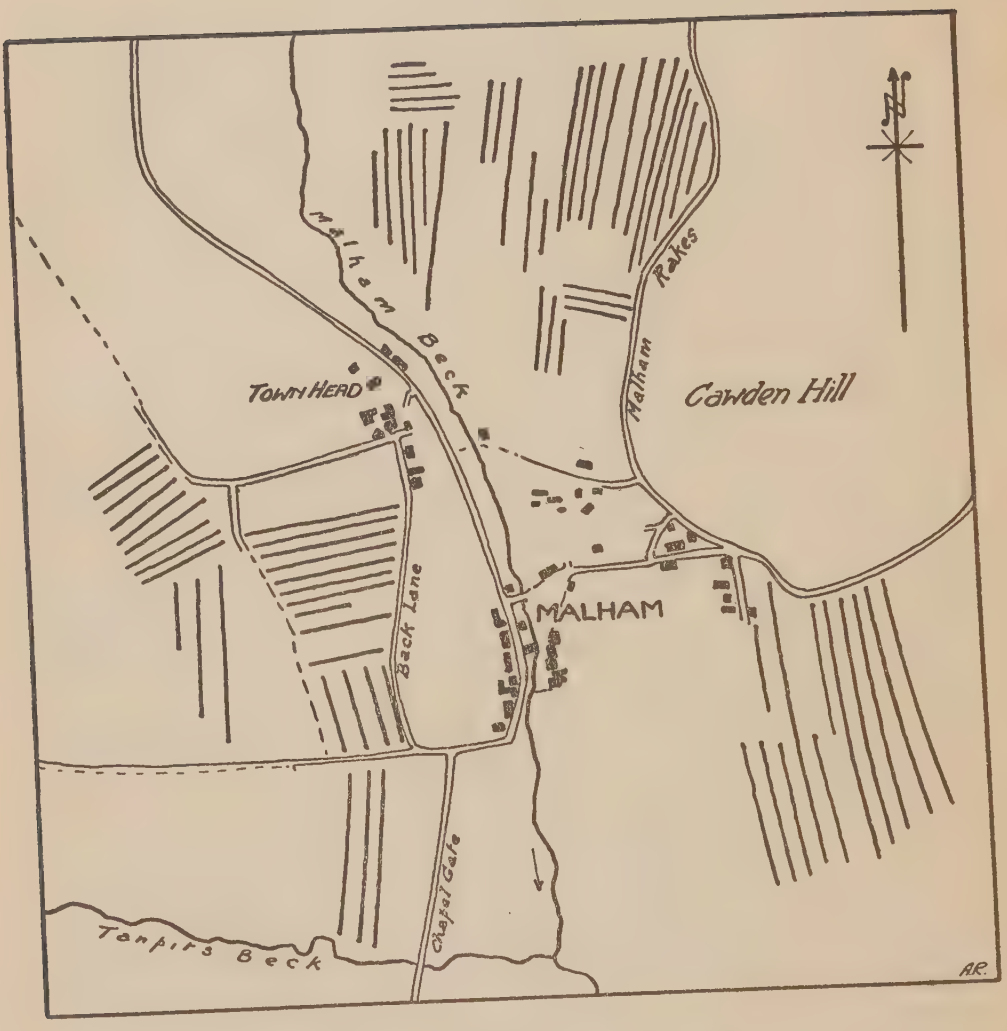

FIG. 6 STRIP LYNCHETS OF MALHAM VILLAGE

O. G. S. Crawford, in the south:—'The upland villages were utterly destroyed; not a vestige of a Saxon object has ever been found in any one of them. Conversely, no evidence is forthcoming that the modern village-sites of Wessex were inhabited before the Saxons came, nor is there any native or Celtic admixture worth speaking of in the early Saxon cemeteries'.[7]

The Saxons introduced a village type, of which Conistone is an almost perfect example:—'The new Saxon manor lay close beside the water-meadow; next came the arable fields; then pasturage and waste or woodland. There was thus a triple zonal arrangement, of arable, pasturage and wood-land (or waste), the zones running parallel with the alluvial water-meadows'.[8]

The Domesday Survey shows Conistone to be a thriving township, and this would accord well with the idea of a Saxon settlement of this village. The church at Conistone is of Saxon foundation, and most of Wharfedale was Christianized about the middle of the 8th century. We would suggest that, in this area at least, the terrace cultivation is of Saxon origin, and that the terraces as mapped enable us to restore the Saxon field systems. The terrace mapping of all the other parishes give almost identical results with Conistone, though there is a marked division into two types of villages. In the long narrow valley of Wharfedale, as also in Wensleydale, the villages are situated at the mid point of two long fields ranged along the valley side. In many of the Airedale and Ribbledale villages where the valleys are much wider, the fields are arranged in three groups around the village as a centre. This is well shown in the map of Malham (Airedale) lynchets (fig. 6). The three-field system which seems to be the normal land system of the Saxons, was frequently modified in the north to a two-field system, to fit the narrow dales.

In Wharfedale the approximate area covered by Saxon lynchets north of Burnsall is 2000 acres. though some have been destroyed in the expansion of Grassington and Kettlewell. At the Domesday Survey the following assessments for taxation were made.

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[7] 'Air Survey and Archaeology', 2nd ed., 1928, pp. 7, 8, (Ordnance Survey, Southampton).

[8] *Geogr. Journ.* May 1923, p. 353.

	carucates
Brinshale (Burnsall) with Torp (Thorpe)	6½
Lipton (Linton)	2
Rilestun (Rylstone)	5½
Ghersintone (Grassington)	6
Cunestune (Conistone) with Chileseie	10
Stamphotne (Starbotton) with Chetelewelle (Kettlewell)	1½
Huburgheham (Hubberholme)	½
Hochesuuic (Hawkswick)	3
Arneclif (Arncliffe)	4
Litone (Litton)	6
Total	45

It must be borne in mind that the Survey carucate is an *assessment* value and not a measure of land. In fact one of the chief difficulties in interpretation of the Survey is the variation of the units used. There is much evidence that the relation between the plough team and the carucate varied according to the nature of the land, in order to adjust the assessment to the wealth of the village.

As Dr Farrer has shown it would be manifestly unfair to assess, on a basis of ploughed land, comparable areas say of Holderness and of the upper West Yorkshire dales, as one community would have the greater part of its land under 'potential plough' while the other, although it had little land to plough, might have an equal wealth from the pasturage of the waste. While the theoretical carucate was the area of one plough team, in practice it became only a unit on which to calculate the tax payable, and represented rather the wealth of the community than the land actually under plough.

It is found that at several villages of upper Wensleydale, of which the area under plough at the time of the Survey is known from other sources, the assessment in carucates is in the ratio of two carucates to one plough team, a ratio obviously imposed in recognition of the fact that a great part of the wealth of the villages lay not in the ploughlands but in pasture. As a working hypothesis we can adopt the ratio for the strictly comparable area of upper Wharfedale and Airedale. The value of the plough team varies between 80 and 120 acres, according to the ease or otherwise of ploughing, and in view of the hilly ground and tough boulder clay soil, we suggest 100 acres to the plough team as the relation for Wharfedale.

The area occupied at present by lynchets in Conistone is approximately 213 acres. We have reason to believe that this represents the whole of the land under plough at the time of the Survey, in Conistone. At the value we suggest, this area, stated to be 4 carucates (Chileseie was 6), would have two plough teams, and this, at the rate of 100 acres per plough team, is 200 acres, a figure quite close enough to the actual area to suggest that the assumptions are correct. As Kilnsey has no ploughed land, its tax was levied on its famous pasturage, later the sheep grange of Fountains abbey. By similar reasoning, the Domesday tax for the whole dale would be on 39 carucates (omitting the Kilnsey 6 carucate pasturage, all other villages having lynchets) and would be about 1850 acres. We have already noted approximately 2000 acres of lynchets in this area.

These ratios for the Domesday Survey hold equally well for parishes in Airedale, Ribbledale, and the other Yorkshire dales, and can, we suggest, be taken as reliable.

From the evidence included in this paper, and from evidence collected during the mapping of several thousands of acres of lynchets, too bulky for inclusion here, we suggest that the strip lynchets of the north of England preserve to us the actual common fields of the Anglian settlers of the 7th to 9th centuries. The rectangular lynchets of the higher slopes of the hills are of dates ranging from Early Iron Age, to the period of the Roman occupation, and to the early 4th century A.D.

Most of the remains from the Wharfedale Celtic sites are now in the Craven Museum, Skipton, through the generous gift of Mr J. Crowther of Grassington, who through 30 years has collected the antiquities of the dale, and preserved them at his own cost, until the founding of the new museum. The discussion of these remains in detail, and of the numerous cave excavations and barrow contents of recent years, is reserved for a later paper.

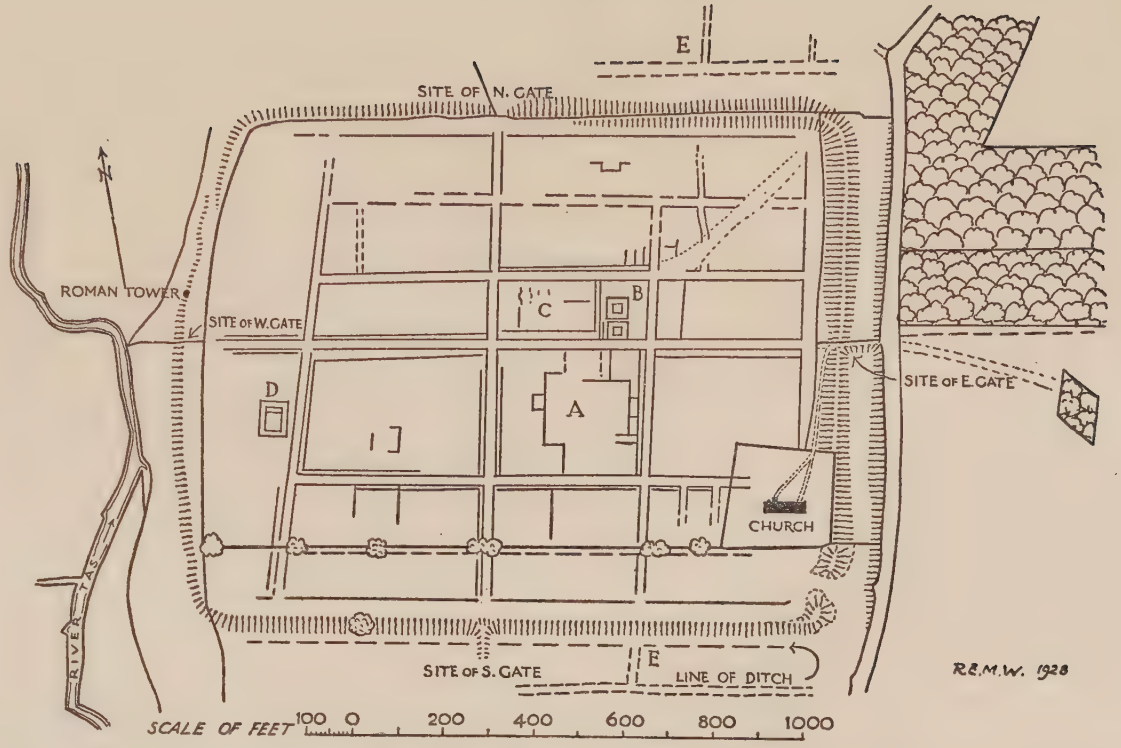
Caistor, and a Comment

by R. E. M. Wheeler

SO Caistor-by-Norwich is to be excavated. It has long been known that in the 30-acre field adjoining the little church of St. Edmund a ghost of the Roman town shows dimly from time to time as a net-work of lines in the sun-dried corn. Last year on the 20th of July, during the midsummer heat-wave, a Royal Air Force aeroplane, flying at a height of 2400 feet over the ripening barley, took a series of photographs which were first published (as a single plate) in the *Times* of 4th March 1929. These photographs show, within the circuit of the existing Roman town-walls, the main street-plan of Venta Icenorum. With them appeared an appeal for funds for the purpose of excavation.

For the initiative in this matter credit is due to Mr. B. Cozens-Hardy, who may congratulate himself upon having been instrumental in securing the most 'dramatic' example of the potentialities of air-archaeology yet produced in this country. For purely scientific interest this photograph yields precedence to many others taken in the Salisbury Plain area during the past decade ; but the Caistor photograph establishes, once and for all, the desirability of air-photography as a normal precursor to excavation even on sites of known character and extent. Indeed, air-photography may henceforth be regarded as a necessity rather than as a luxury in the equipment of the field-archaeologist.

In the past, the antiquaries of Norfolk have contributed but little to the archaeology of Britain, and the Roman remains of the county are almost unknown. Now, at last, all is changed ; the air-photograph was irresistible. A 'Caistor-next-Norwich Excavation Committee' has come into being and has at the outset taken a wise step in searching beyond its county-borders for an excavator. Mr Donald Atkinson, once a distinguished pupil of Professor Haverfield and more recently, amongst other things, the excavator of the forum and basilica of Roman Wroxeter, has accepted the Committee's invitation to direct the work. Of this acceptance it need only be said that, in it, the discretion of the Committee has met with the good fortune that it deserves.



KEY TO THE AIR-PHOTOGRAPH

A) PROBABLE SITE OF FORUM; (B) TWO 'ROMANO-CELTIC' TEMPLES; (C) POSSIBLY BATHS; (D) POSSIBLY TEMPLE; (EE) POINTS AT WHICH STREETS APPEAR TO UNDERLIE THE EXISTING FORTIFICATIONS

Thus far then the means have been well chosen. What of the end? Venta Icenorum is about 35 acres in extent, and to turn over that area yard by yard will cost upwards of £15,000, apart altogether from the very considerable cost of publication. At the outset, therefore, we may well pause to ask what our return for this expenditure is likely to be—what historical problems the excavation of this little Roman town is likely to solve.

Venta Icenorum, we may premise, was the principal township within the tribal area of the Iceni, who in Roman times seem to have occupied approximately the area of Norfolk and Suffolk. That area is by nature one of peaceful pasturage and tillage. Such a region is liable to be somewhat lacking in history, and it is not surprising, therefore, that our records have little to tell of these same Iceni. True, amid flames and crucifixions they live for a tumultuous moment in history, but, after the terrible vengeance which the Roman governor exacted in the year 61 from Boudicca's maddened tribesmen, they relapse for ever into their peaceful countryside.

The Iceni, therefore, may be said to have no history. Before the Romans came we may suppose that, like other Celtic or semi-Celtic tribes in Gaul and southern Britain, they lived throughout their district in scattered groups which may here and there have crystallized into more or less permanent trading-stations or markets. After the Claudian conquest, the Roman policy of urbanizing and so centralizing the administration of the tribes here, as elsewhere, found expression in the establishment, within the tribal area, of a town of Roman design, with all those civilized attractions which were calculated to reconcile the native magnates to the new order of things. It is safe to imagine that Roman Caistor was a political and social bait of this kind.

Occasionally, these new Roman tribal centres seem to have been placed upon the site of a native settlement. Such, for example, may have been the case at Silchester, where it is often claimed, with rather more confidence than the evidence warrants, that the Roman capital of the Atrebates is set within a pre-Roman outline. Was Caistor also a market-town of the Iceni before the Romans came? This is a question which excavation alone can answer. The river-side site is not of the kind normally chosen by the native British, but the habits and customs of the pre-Roman Iceni are even less known to us than those of their Romanized successors.

A second problem is that of the town-walls. Today, on the north, east and south sides of the town these walls are largely overgrown, but

beneath their earthen covering they survive to a commanding height. To the west, a tower of late-Roman type stands among the bushes beside the stream, and another tower is recorded to have been found near the north-eastern corner. Whether these towers are of the same build as the walls is not clear ; nor do we know at what period in the history of the Roman town these great walls were erected. The moment must have been one of more than local importance and, here, perhaps more nearly than in any other respect, Caistor may be found to reflect the active history of the province as a whole.

This, then, is a problem which is worthy of an excavator with his eye to the greater issues. Here and there, the air-photograph seems to offer him a preliminary hint. If the main street-lines shown upon it are tolerably complete, it is evident that the town-plan bears only a partial relation to the defences. Except for the central thoroughfare, the transverse streets seem to stop towards the west at a considerable distance from the western wall, whilst there is a suspicion (which may or may not be correct) that the southern and northern walls cut through the lines of some of the north-to-south streets and is therefore subsequent to them. Nor do the larger *insulae* fit in normal fashion into the enclosed area. Did Caistor—unlike that other tribal capital, Caerwent, which was fenced from the outset—begin as an open town and receive its walls only when the Saxon pirates of the 3rd and 4th century necessitated the arming of our south-eastern coasts ? If so the exclusion of a part of the original town from the circuit of the new defences finds many parallels in Gaul, whilst on the other hand the prolongation of those defences westward to the bank of the river is readily explained on military grounds.

A third problem. What was the fate of Caistor at the end of the Roman occupation ? Did it linger on into gradual decay as the tribal capitals of Silchester and Wroxeter appear to have done, or was the place sacked in some sudden foray? And, if so, when? Here it is possible that extensive excavation may add a little welcome knowledge concerning the early years of the 5th century, but too much must not be expected.

These three problems are all of interest. On the other hand, from the buildings which Mr Atkinson will reveal in the course of his work we shall probably learn little. The best that we can hope is the recovery of the plan of a small Romano-British Christian church. For the rest, the plans of temples, such as those which show clearly on the air-photograph near the centre of the town, are already known from a

hundred analogies in western Europe. Dwelling-houses, shops and public-buildings are in similar case, but their *history*, as Mr Atkinson will be able to recover it by means of the modern technique of excavation, will add something to knowledge.

This brings us back to our starting point. How far is the excavation of Caistor a justifiable outlay of energy and money at the present time? The Britisher is, by nature, opportunist and, in his involved and muddled way, generally at prodigious cost, he has the habit of winning through in the end. For that very reason, he is inclined to raise Muddle to the rank of a fetish, and to regard it as a national virtue. But even a virtue, over-ridden, is liable to tire. Romano-British archaeology is a case in point. During the past ten years, we have been hacking up this Roman Britain of ours with unprecedented zest. Some of the work has been fruitless through mere incompetence; some has been equally fruitless through lack of adequate publication; some has been fruitful, and we can honestly say that our knowledge of Roman Britain has, in certain directions, increased generously during the period. But how much effort has been wasted, both in detail and in bulk, from the absence of a concerted plan of campaign! A certain element of opportunism is inevitable. A threatened site even of secondary importance must be excavated or at least trenched before it is permanently lost. Occasionally, as at Caerleon, this stress of circumstance has done good service in concentrating effort upon a site of first-class importance; although, here, the stress is such as to reduce excavation to something approaching an indecent scramble against time. Apart, however, from instances such as this, the time is ripe for some central and influential body to bring order into chaos. On a wide view, it is easy to see that the excavation of some Romano-British sites will make an important contribution to knowledge whilst others are likely to yield but little. Moreover—and here a little opportunism must be allowed to leak in—certain sites are likely to remain 'safe' for an indefinite period of time whilst others in or close to modern towns are in actual or potential danger. On a balance of the two considerations it is self-evident that for some years to come Romano-British archaeology should concentrate its major efforts upon those important sites which are most nearly in contact with modern 'development'—sites such as Caerleon or Colchester or St. Albans—and should reserve for a future generation those sites which, however useful in detail, may safely be left a little longer to the ploughman and the grazier. Of the latter sites, Caistor is one. There can be no doubt

that the excavation of Caistor will amplify our knowledge of an aspect of Roman Britain that has so far received inadequate scientific attention. However little these small country-towns may be found to reflect the acts of princes and pretenders, they at least represent a part of that cultural background without which our historical perspective can never approach completeness. But *economically* the excavation of Caistor at the present time can be justified only in so far as it enlists those purely local interests to which the wider issues are not likely to appeal. For those who are able to take a more comprehensive view of the present and pressing requirements of Romano-British archaeology it must be clear that, at a moment when our only available legionary fortress, our premier Roman colony and our only Roman municipality are all in actual or potential danger of obliteration, the excavation of this remote Norfolk cornfield is a luxury that could well have been deferred.

Three Hill Forts in Eastern Spain

by W. J. Hemp

THE mountain known as Mongó is an isolated mass of limestone, rising to a height of over 2500 feet above the level plains which border the sea in the neighbourhood of Denia in the ancient territory of the Contestani and the modern province of Alicante (pl. 1). Standing free, as it does, from the main mass of mountains, it is the most conspicuous landmark on the promontory which stretches eastwards towards the Balearic Islands. The views from its summit cover a wonderful expanse of country; south and westwards to the mountains, northwest across miles of orange groves to the coast leading to Valencia and beyond (pl. 6), while eastwards the Isle of Ibiza is clearly visible 70 miles away.

The top of the mountain forms a long and narrow undulating plateau of jagged rock, stretching from east to west for some two and a half miles. It is guarded on all sides by sheer precipices and is only accessible at a few points (pls. 1–3). The summit is at the eastern end, and the lowest part, perhaps some 2000 feet above the sea, is at the west; here is placed a hill fort, or rather a citadel, for the whole area of the mountain top is fortified. The end of the plateau is cut off by a dry built stone wall some 70 yards long, 4 yards thick and at present about 10 feet high where it is best preserved. It is, however, much ruined throughout, and several yards of its southern end have been completely and no doubt deliberately destroyed, so that only the foundations remain. The wall is sited on the crest of a slope facing eastwards and follows the irregularities of its summit line, no section being straight. An entrance can still be traced at its highest point at the south end, where the main wall buts up against a rock face. The entry is only some two to three feet wide and is a simple gap in the wall, probably occupied by steps ascending to the interior; it is very slightly 'bottle-necked'. The wall has good outer and inner faces built of the largest stones available and filled in with smaller rubble. None of the stones have been dressed with a tool.

At the extreme western end of the site is a very steep and narrow

pathway leading down the rock faces and along the ridge ; no artificial defences remain here, but the slightest additions would be enough to block the way, and these could easily have been removed leaving no trace. A short way down is the approach to two or three caves in the southern rock face which may well have sheltered the inhabitants. There are no remains of huts in the citadel, nor were any observed elsewhere on the hill top, but several spots which offered obviously suitable sites, being level and comparatively free from rock outcrops, are thickly covered with fragments of pottery. There is at least one small group of rectangular huts on the northern slope of the mountain at the eastern end. The ground on the summit falls away eastward from the base of the wall to form a shallow valley, and the westward facing slopes of this are also thickly strewn with pottery and form a number of natural terraces admirably suited for occupation. Here, on either side of the mountain, pathways reach the summit, and their course also is marked by abundant pottery. That from the south lies along a series of ledges a few hundred feet below the mountain top and passes the mouths of shallow caves. Each approach was easily defensible but neither now shows any sign of walling.

Beyond the cross valley, passing eastward along the summit, the plateau slopes up for several hundred yards before dipping again ; over the crest, commanding its eastern slope, is a second wall, obviously built to obstruct advance from the east. Like the citadel wall, it is dry built, and similarly its northern end has been deliberately destroyed, while the south end also is now incomplete. It differs however in type from the wall first described as, although it is sited so as to take advantage of the natural fall of the ground and the rock faces, it is carefully built in straight sections. It is two to three yards thick and four to five feet high where it is best preserved. The entrance is rather more elaborate than that through the first wall, being formed by a simple overlap of about four yards (fig. 1). The total length is about 120 yards.

Still further along the plateau is a third wall 10 feet wide, and similarly sited to the last, which it closely resembles in being built in straight sections and having its north end destroyed ; the south end however still runs out to the precipice (pl. 4).

The whole wall is much ruined ; advantage is taken of the rock outcrops which are closely followed, and at one point, where this practice involves a short change of direction, the angle is turned by a short straight stretch of walling which has an internal face 2 feet 6 inches from the outer one, the only instance of compound walling which

was observed on the hill. The entrance is more elaborate than any of the others (fig. 1). It is so contrived at a point where the wall takes a right-angled turn, that anyone entering from the outer side has to pass between the edge of a low precipice and the thickened end of the wall before making a sharp turn to the left to pass the slightly rounded end of the wall which forms the other side of the entrance.

There is at least one approach from the north side of the mountain to the summit plateau, to the east of the wall last described, but no opportunity occurred of examining this closely for signs of fortification.

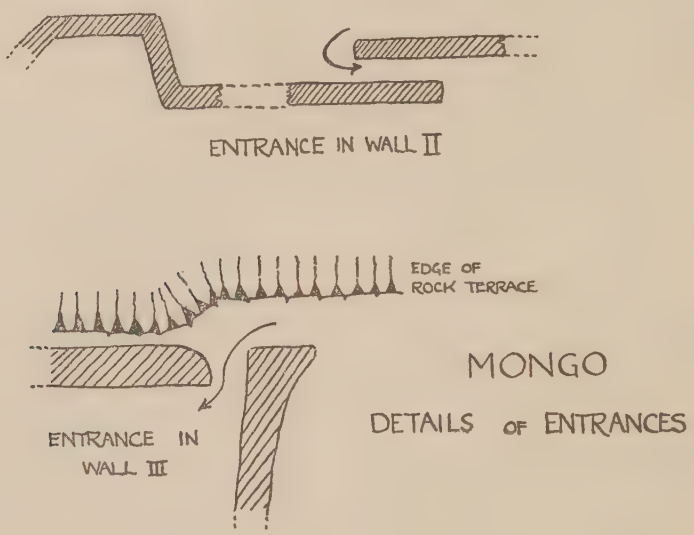


Fig. 1

The mountain-top ends in a very narrow ridge leading steeply down in the direction of the town of Javea (pls. 1, 2); it is bounded on the south by sheer precipices, and on the north by very steep rocky slopes. A short distance below the summit access is blocked by a straight section of dry built wall about 150 yards long, crossing the crest of the ridge diagonally and rendering it impossible of access from the northern slopes except through the entrance; above this point there is room for the pathway between the wall and the precipices, and a short distance below it the wall ends at the edge of a sheer drop. The entrance is a simple passage 10 feet long passing at right angles through the wall, which is here thickened and still stands to a height of

six feet on its western side. The passage is 4 feet 6 inches wide and slopes up steeply, apparently by means of rough steps but fallen stones obscure the details.

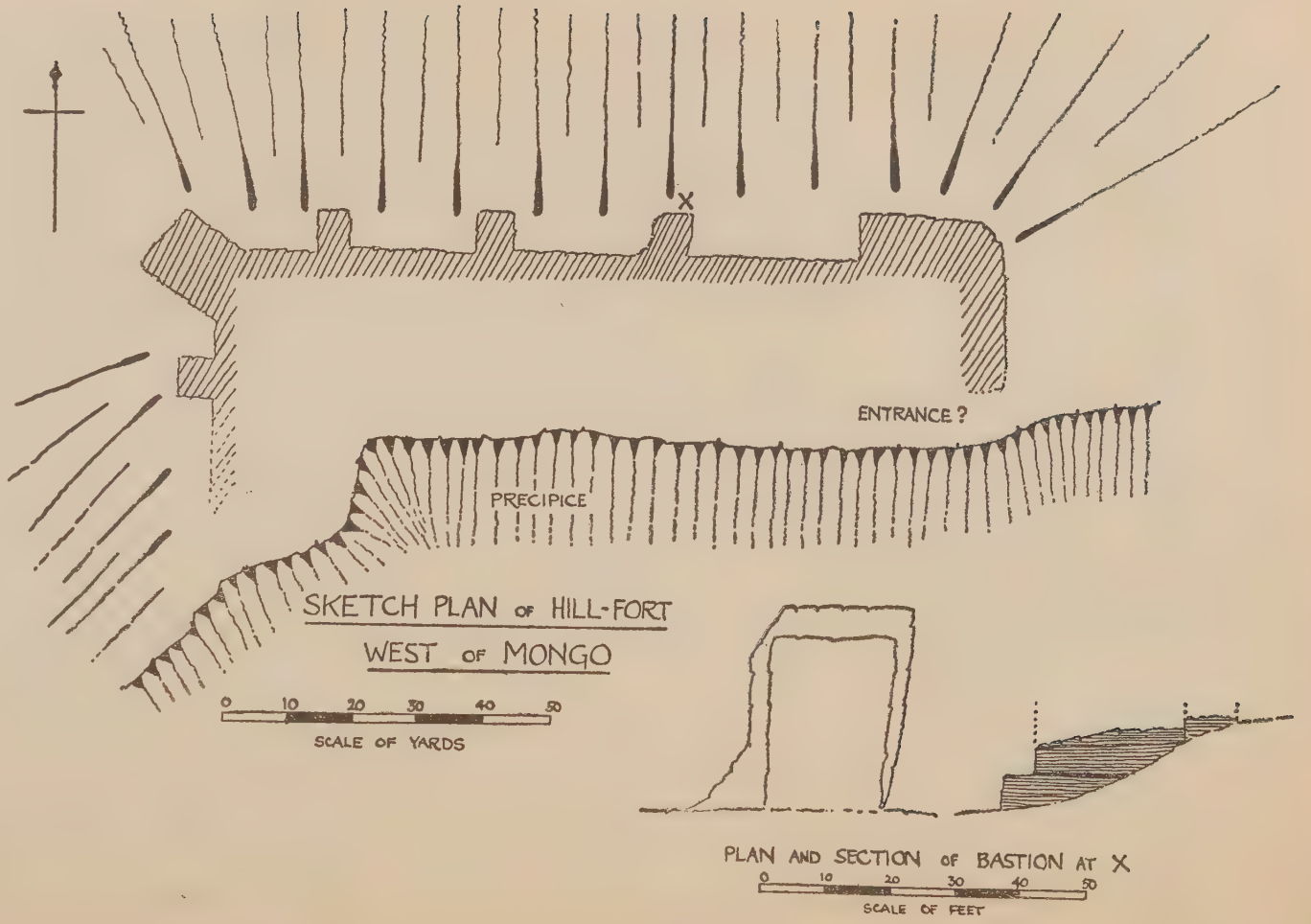
It is perhaps allowable to argue from the rougher method of construction of the citadel wall that its erection may have taken place at an earlier date than the other three defensive walls, and it seems almost certain that the destruction of a section of each of the main walls on the summit of the mountain must have been the act of a triumphant enemy.

The pottery is mostly the painted 'Iberian', with some fragments of fine Greek ware and others of coarse red and black paste containing many particles of mica, as well as many pieces of amphorae.

Around the eastern and western ends of Mongó are grouped rounded foot hills having an average height of about 1000 feet; the most westerly projection is surrounded on three sides by the level plains (pl. 6), and is cut off from the main mass of Mongó by a low saddle to which the ridge leading from the Mongó citadel drops steeply (pls. 3, 6). About half a mile from the foot of that ridge one of the summits is crowned by a small fort which forms an interesting contrast to the defences of Mongó (fig. 2). Some 30 or 40 yards below the hill top on the southern side is a precipice which nearly reaches the crest at its eastern end. A wall is placed along the summit of the ridge from this point, running in a straight line for about 100 yards in a westerly direction and then turning southward at right angles for 25 yards before coming to an end. Modern cultivation terraces cover any further course it may have followed, but the lie of the land suggests that it originally returned eastward to meet the edge of the precipice.

The most striking feature of the fort, which contrasts it with the defences of Mongó, is the existence of a number of bastions projecting boldly from the wall (pl. 5), five along the northern face, including those at the corners, and one on the western. The bastions, like the main wall, are built of the largest available blocks of the weathered limestone of which the hill is composed, filled in with small stones and soil; they are skilfully fitted together, but have not been dressed. With one exception, the bastions are approximately rectangular and are placed on slightly larger platforms which make up the fall of the ground in front of the wall; in one case the platform projects 6 feet 6 inches in front of the bastion proper and from 1 foot 6 inches to 2 feet on either side, the outer face of the platform being 10 feet high and the bastion upon it 6 feet. The largest bastion, that at the north-west corner, projects

Fig. 2


X
ENTRANCE ?
PRECIPICE
SKETCH PLAN OF HILL-FORT
WEST OF MONGO
0 10 20 30 40 50
SCALE OF YARDS
PLAN AND SECTION OF BASTION AT X
0 10 20 30 40 50
SCALE OF FEET

10 yards from the north wall and 13 from the west, being 12 yards wide. These measurements are taken at ground level and are of the platform, the bastion itself, which is much ruined, may have been slightly smaller. The north-eastern angle is much ruined, but the bastion seems to have projected at right angles to the wall and to have been carried round and backwards so as to approach the precipice. Possibly there was an entrance here, but as the whole area is occupied by terraces now under cultivation, which run up to and make use of the walls, accurate observation is impossible.

Much pottery is scattered over the site and resembles generally that from the neighbouring fort on Mongó, but no fragments of amphorae were observed. Half of a round and moderately flat quern has recently been dug up by the cultivators. Unfortunately the Iberian pottery has not yet been sufficiently classified for the different types to afford sure evidence for exact dating, but the projecting bastions suggest a relative period for the construction of this little fortress. They do not appear to be well adapted for such a hill-top site, although they do outflank and give the defenders some additional command over the wall. They are not, however, a natural development of the system of defence and I suggest that their existence is due to the Greek colonization of eastern Spain. At Ampurias the Greek colonists of about B.C. 500 set up the defences of their town of Emporion on the model of many cities of classical Greece, namely straight lengths of wall built of great stones having their faces wrought to fit, without quoins but with draughted edges. Bastions are a conspicuous and necessary feature as the defences are drawn along comparatively level ground. Here then is likely to be the explanation of the bastions on the slope of Mongó, the Iberians copying to the best of their ability in rough undressed stone the new type of fortress introduced by the Greek colonists. It is perhaps a reasonable deduction that the citadel was the earliest fortification of Mongó, that it was later extended to cover the whole summit of the mountain, but still at an early period, and that yet later, after the Greek colonization, the lower fort was built embodying the newest fashion in fortification.

About 30 miles to the west of Denia, in the province of Valencia and near the town of Albaida, is a hill fort known as Covalta, which has been carefully and systematically excavated by Senor Isidoro Ballester Tormo of Albaida and Valencia. It lies at a height of about 3000 feet and crowns a mountain top which has a sheer descent on one side but

comparatively gentle slopes elsewhere. A stone wall 9–12 feet thick follows round the regular curve of the hill, beginning and ending at the precipice. Within the wall is a series of concentric terraces culminating in a level area at the summit which seems to have been treated as a citadel. Planted thickly on the terraces are the foundations of rectangular huts of various sizes which have been exposed and cleared by Senor Ballester. Unfortunately he has not yet been able to find a publisher for the results of his work, but all the objects recovered have been preserved and labelled with the greatest care. This being the case it is sufficient to say that examples of both *antennae* swords and the *espada falcata* were found, which should indicate occupation during the fifth century B.C., and again Greek influences; these however, in this case, did not extend to the fortifications, which exactly resemble what might be found in a similar site in Britain. The entrances appear to have been at the ends of the wall at the edge of the precipice.

I have to acknowledge the courtesy of Senor Ballester for so kindly showing me the results of his excavation.

The existence of the Mongó hill forts does not seem to have been suspected previously, but Senor Don Francisco Martinez y Martinez of Valencia, to whom I handed samples of the pottery for his collection at Barcelona, has since made a brief reference to the larger fort[1] to reinforce his argument that Denia is actually, what tradition asserts it to be, the Hemeroskopeion of Avienus and Strabo, and that Professor Rhys Carpenter's attempt to locate that site at Ifach[2] is based on insufficient evidence. Senor Martinez considers that some of the Mongó pottery containing specks of mica is neolithic. This opinion I should hesitate to endorse without greater experience of the local wares, as I have found many similar sherds on *talayot* sites in Mallorca, where none seems to be of an earlier date than the bronze age, and some much more recent. I also collected many fragments close to the large cave which is to be found in the face of the precipice just below the hill fort on Covalta, where they might have come with equal probability from the cave or the fort.

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[1] F. Martinez y Martinez, *Arqueologia Valenciana: Hemeroscopeio e Ifach*. Madrid, 1928.

[2] Rhys Carpenter, *Bryn Mawr Notes and Monographs*, VI. *The Greeks in Spain*. Bryn Mawr, Pennsylvania, 1925.

The Roman Siege of Masada

by Christopher Hawkes

THE arid plateau of the Judaean wilderness drops on the east to the trough of the Dead Sea in a long range of sheer cliffs, which are pierced about 32 miles south of the mouth of the Jordan by the ravine of the Wad-el-Hâfâf. On its northern flank a huge mass of their red limestone has split away to form an isolated flat-topped crag standing 1700 feet above the Dead Sea about a mile and a half from its western shore.

This is the rock of Sebbeh, the ancient Masada. The Wad-el-Hâfâf skirts it on the south, and on the west it is separated by a saddle 150 yards wide from the main plateau, which runs out towards it in a slight promontory some 200 feet lower than its summit. From the north side of this saddle the Wad-es-Seyal begins, and passes below the northern face of the crag.

Jonathan Maccabaeus, in the middle of the 2nd century B.C., first fortified this superb but waterless natural stronghold ; it remained a Jewish fortress under the Hasmonaeans, and played an important part in the wars attending Herod the Great's accession. From it he fled by way of Arabia to intrigue with the Roman triumvirs in Italy for the throne, leaving his family and entire following to be besieged by the Hasmonaean Antigonus (B.C. 40), and only timely rainfall saved them from surrender through thirst.

Next year, while Ventidius Bassus was crushing the Parthians who had invaded all the Roman East and incidentally supported Antigonus, Herod, now appointed king by the triumvirs, landed at Ptolemais and marched to relieve Masada with a large Jewish and mercenary force and detachments from Bassus' troops, of whose camps there are almost certain traces by the Wad-el-Hâfâf. He was entirely successful, and later, after finally establishing his rule over Judaea, he set about making the fortress impregnable; for his fears of Antony and Cleopatra, and of Jewish rebellions, made essential a stronghold where his family and treasure would be safe in times of danger, as happened after the murder of Hyrcanus.

The length and breadth of the summit are 800 and 350 yards roughly, and the whole circuit of some 1630 yards was surrounded by a white limestone wall, which Josephus states was 12 cubits high and 8 broad, with 38 towers 50 cubits high at intervals round the inside; this is now everywhere partly but nowhere wholly ruinous. In addition to several other buildings, porticoes and baths, a palace was built by the western gate, whence an underground passage is stated to have led to the highest point at the northern end, where stood a complex structure with narrow parallel rooms, evidently barracks, this peninsula forming an inner citadel. Nearly 100 feet below it is a ledge where a double-walled round tower was perched, and another, about 40 feet below this, held a smaller square turret. In the cavernous rock-hewn storerooms of his arsenal (lit by windows still visible in the northern cliff) quantities of provisions remained fresh, so Josephus asserts, for nearly a century, while to the rain-water cisterns already existing more were added (there are at least 7 in all), one at the south end being particularly noticeable, lined with stucco and entered by steps.

The fortress was immensely strong, for there are only three possible approaches.

One, a zigzag path at the north end, was climbed in 1848[1]; Josephus ignores this, but he describes the second, a perilous ascent up the eastern cliff, known as the 'Serpent', with a vividness suggesting that he had himself braved its terrors: this was also achieved in 1867 by Captain Warren, R.E.,[2] who found extra fortifications guarding its top. The third is the more obvious but still difficult way across the western neck from the projection of the plateau which Josephus calls the 'White Cliff' or Leuke: at the narrowest point of this neck Herod built a tower controlling the approach, and in the wall above was the main gate.[3] This work (though there may have been previous buildings) fulfilled Herod's purpose, and good soil was kept free for agriculture if needed—which the rock's present aridity makes hard to believe.

When we next hear of Masada, Herod's days were long past; Judaea was a Roman province, and a Roman garrison occupied the

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[1] Lynch, *Official Report of U.S. Expedition to explore the Dead Sea and River Jordan*, p. 330 ff.

[2] *Quarterly Statement of Palestine Exploration Fund*, 1869, p. 146 ff.

[3] The topography in Josephus, *Bell. Jud.* VII, 280 ff. and 305 is clear enough if it be borne in mind (1) that the descriptions are as from inside Masada, (2) that the whole fortress-area and the northern summit are to be distinguished from each other.

citadel. In 66 A.D. the first real act of war by the Jewish rebels was its treacherous seizure ; Manahem next rifled Herod's armoury, and soon Eleazar and his *sicarii* were giving the place an evil name as a robber stronghold. Later the notorious Simon Bar-Giora, fleeing from Jerusalem, was admitted first to the lower western tower and then to the fortress itself, where he rapidly became a ringleader ; it was the centre for organized campaigns of pillage throughout the Jewish war, and after the fall of Jerusalem it was, with the somewhat similar fortresses of Herodeum and Machaerus, the only remaining stronghold of the national resistance to Rome.

Titus left Legion X Fretensis and some auxiliaries in permanent garrison in Judaea under Lucilius Bassus, who died after reducing Herodeum and Machaerus during 71 A.D., and his successor Flavius Silva concentrated all his troops early next year to deal against Masada the final blow of the war.

Eleazar still led the desperate ruffians who represented the remnant of the Chosen People ; counting women and children, there were perhaps 1000. They scorned escape, but with Herod's stores for 10,000 probably little diminished there was hope of resistance, if water lasted —indeed, the problem of supplies was far more acute for the besiegers. But Silva was a thorough and pertinacious officer ; he posted garrisons in the surrounding country, and arrived before Masada with some 6000 men probably by the Dead Sea route, where south of Engedi remains of an apparently Roman road have been seen.

The Jewish war had been one of sieges, and the lessons of Jotapata and Jerusalem had made it clear that in such a case a complete circumvallation was an indispensable preliminary to assault. Silva lost no time. He put a cohort on the Leuke (camp E, fig. 1), and another south of the fortress above the Wad-el-Hâfâf (camp G) ; south-east of this, where the plateau cliffs run eastward and overlook the interior of Masada, a smaller cohort encamped (camp H), while another (D) guarded the flats by the Wad-es-Seyal on the north. These camps were linked with a stone wall taking every advantage of the contours, with occasional towers.

The huge precipice on the south was safe, but continuous walling spanned all the eastern flats, with towers about every 100 yards. On its line an auxiliary camp (A) held the right bank of the Wad-el-Hâfâf, and just behind it another (C), larger, held the left bank where part of Herod's relieving army had probably lain over a century before. The single legion must have established successively the two legionary

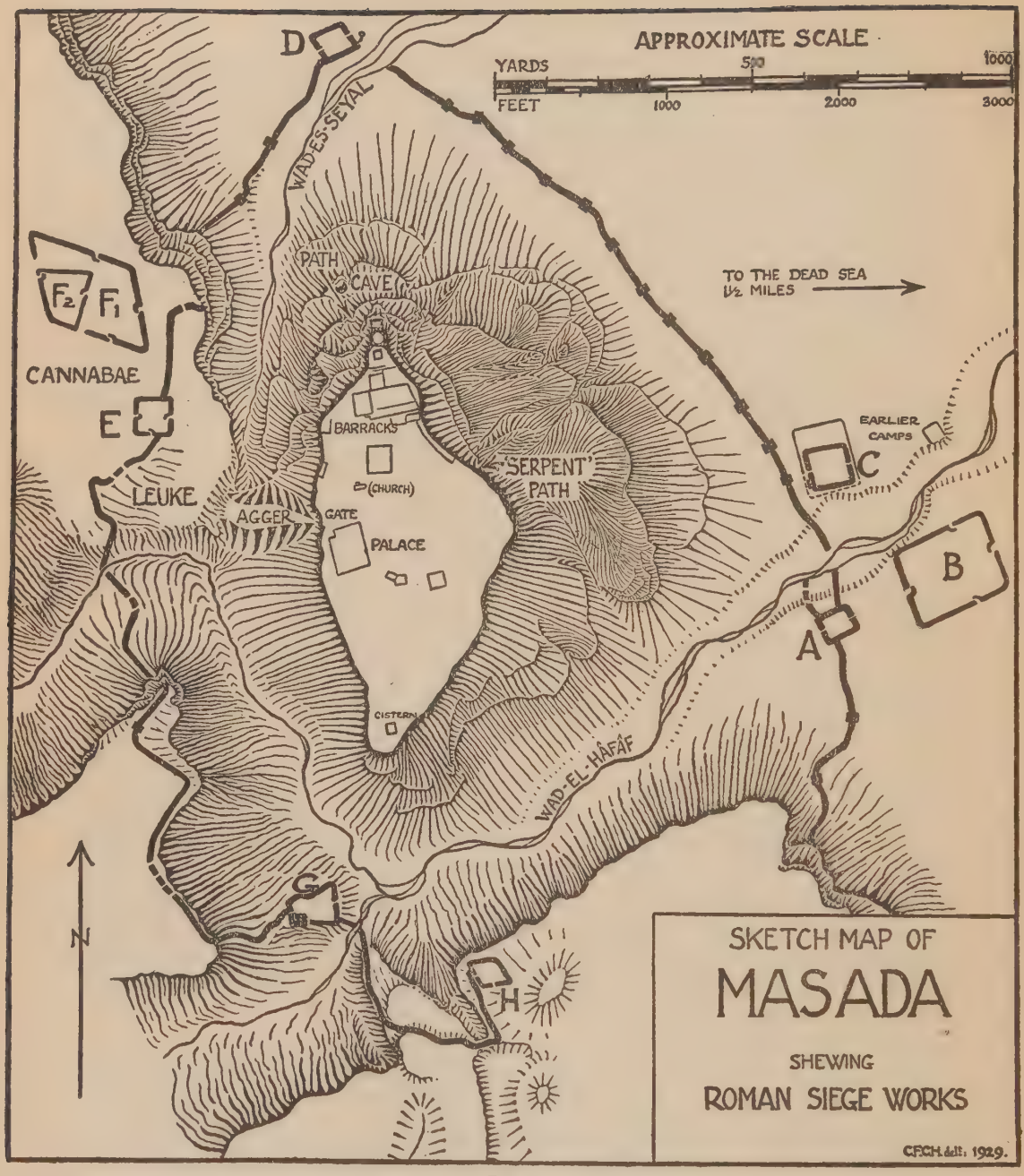
APPROXIMATE SCALE
YARDS 500 1000
FEET 1000 2000 3000
D
WAD-ES-SEYAL
PATH
CAVE
TO THE DEAD SEA
½ MILES
F2
F1
CANNABAE
E
BARRACKS
(CHURCH)
"SERPENT" PATH
EARLIER CAMPS
C
LEUKE
AGGER
GATE
PALACE
B
A
CISTERN
WAD-EL-HÂFÂF
N
G
H
SKETCH MAP OF
MASADA
SHEWING
ROMAN SIEGE WORKS
CFCH. del: 1929.

FIG. 1

camps still visible[4]; Josephus says Silva first occupied the point of the plateau nearest to Masada (i.e. the Leuke), but as he moves him thither again subsequently the camp there (F1) must be the second position of x Fretensis, and despite the historian's confusion its first must be that on the east (B), behind the two auxiliary camps on the Wad-el-Hâfâf.

The probable reason for this first position is that Silva thought escape south-eastwards to Arabia more likely than resistance. When Eleazar's determination to hold out became clear, he moved to the Leuke, the only possible base for attack, and just behind the investing wall encamped the legion, which was to be his striking force, while the auxiliaries garrisoned the blockading works.[5] His main embarrassment was over commissariat: all food and water had to be brought him by *corvées* of Jews. If what has been seen by travellers[6] along the Wad-es-Seyal below the cave (fig. 1) is really a kilometre of Roman road not visible in these illustrations, resembling that near Engedi, both were probably one road built by Silva for convoys supplying his position on the Leuke.

Anyhow his men had work enough. The 4700 odd yards of circumvallation must have taken some time to build, and when established on the Leuke he immediately began the colossal task of filling the gap which separated him from Masada with an *agger* or mound of earth, well over 300 feet wide at the base, which presumably buried Herod's outpost tower. The lowest point of the saddle was some 175 feet below the Leuke, and from this level the besieged watched the *agger* gradually grow till the top of its slope touched the cliff only 75 feet below their western gate. Meanwhile a wheeled tower, 90 feet high, of wood plated with iron to withstand fire, was being built, which mounted artillery and a battering-ram, and to enable this to arrive opposite the walls a stone causeway, 75 feet high and as broad, was erected up the crest of the *agger*.

What efforts, if any, Eleazar had made to hinder these operations we do not know, but when at last the Roman gunners overtopped his walls and the ram was smashing out a breach, the *sicarii* built another

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[4] Schulten, *Numantia* III, p. 23 fails to see this.

[5] Compare Scipio's offensive and defensive troops at Numantia: Appian, *Iberica*, 92, Schulten, *op. cit.* p. 45. A similar disposition of forces characterized the whole Roman frontier system, the consolidation of which by the Flavians was beginning at the time of the siege of Masada. cf. p. 213 below.

[6] Lynch, *op. cit.* p. 330; Rey, *Voyage dans le Haouran*, p. 284; von Domaszewski, *De Provincia Arabia*, III, p. 224.

wall inside, of timbers laid lengthwise and crosswise with a core of earth, which the ram simply shook into greater compactness. The Romans, in no way baffled, set fire to it, and it burnt furiously.[7]

The wind blew the flames back against them at first, but then suddenly changed and bore against the defenders with ruinous effect. It was an act of God. When the Romans next morning (3 May 72) laid gangways out from their tower, and advanced against the now defenceless stronghold, the palace was in flames, and all was silent. During the night Eleazar had inspired the garrison with the courage of despair, and all had voluntarily perished at the hands of ten chosen executioners, one of whom then slew his companions and himself. The dead were 960 in all, and two women and five children alone remained, hidden in the underground caverns.[8]

The impressiveness of this last desperate act of Jewish heroism is painfully overstressed by Josephus' rhetoric, and we are moved to wonder no less by the astonishing achievement of Roman siege engineering in that desolate wilderness.

Silva left a garrison and marched away, but except for the causeway crowning the *agger* the stonework and earthwork of his army still remain. A church, perhaps of the crusading period, has appeared near the still smoke-stained walls of Herod's palace, and the adjacent west gate is now of Arab build and bears Arab tribal marks; but essential change there is none. A succession of 19th century travellers have visited the site and published descriptions, culminating in that of von Domaszewski in 1898; but valuable as their accounts have proved, criticism of the remains has been put on a new footing by the set of air-photographs taken in 1924 and 1928 by officers of the Royal Air Force stationed at Amman.

The map (fig. 1) is entirely based on the evidence of the camera; the camps are distinguished by von Domaszewski's lettering, but it owes nothing to his or other travellers' unreliable sketches.

Of the air-photographs here published, plate I shows Masada itself,

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[7] As its interior was solid earth, Josephus' phrase 'burnt up through its hollowness', *Bell. Jud.* VII, 316, is puzzling. Probably the timbers burnt out and created hollow flues by which the fire penetrated the whole structure; such a process was adduced by Déchelette to explain the 'vitrified forts' of Western Europe: *Manuel*, II. 2, p. 704 ff.

[8] The references to Josephus (Teubner text) for the forgoing narrative are: for earlier history *Antiq. Jud.* XIV, 296, 335, 390–400; XV, 184: *Bell. Jud.* I, 236, 266; II, 408, 433–4, 447, 653; IV, 399–405, 503–6, 555; for topography and account of siege VII, 252–407.

with the Herodian ruins, and the north-west span of circumvallation. A strong high-light falls on the *agger* in front of camp E, and inside camp F1 a smaller enclosure (F2) will be noted, to be explained hereafter ; around are seen the numerous scattered *cannabae* of the camp-followers of the army, which correspond to the *vicus* or regular civil settlement outside nearly all Roman permanent stations.

Plate II comprises the S-W angle of the works showing camps G and H. In plate III appear the western wall and towers, camps A and C guarding the Wad-el-Hâfâf, and camp B, the total absence here of *cannabae* like those on the Leuke emphasizing its temporary nature. There are two oblique views in this area. Plate IV shews camp C and the wall from the east, with the foot of the Masada cliffs in the background ; the remains of the towers on the wall, and its course to the edge of the Wady, are apparent, but the most striking feature, less clearly visible on plate III, is the outline of an earlier Roman camp, hardly of legionary size, surrounding camp C, which was in fact constructed inside its area. The well-known ' playing-card ' shape is easily distinguishable, though the traces of the walls are faint, as they must have served as a quarry for Silva's auxiliaries. A smaller and presumably contemporary camp in the same ruinous condition is visible in the foreground on the right of the Wady ; both are unmistakably Roman work, and they are here[9] attributed to the troops from the army of Ventidius Bassus present[10] in Herod's relieving expedition of B.C. 39 : no other possible occasion for their construction seems to be attested. Hebrew levies or Oriental mercenaries cannot have made camps in the Roman manner, and while the possibility of an unrecorded Roman force on the site at some other time must not be ignored, the present explanation appears reasonable ; these are the only similar remains to be found, and a position so far from the Leuke suits relieving rather than besieging troops. Herod might well send his Roman detachments here to cut off Antigonus on the Leuke from the retreat towards Arabia which he himself had effected the year before.

Plate V shows camps A and B obliquely from the east, and plates VI and VII the wall, camps, and *cannabae* on the Leuke from the north-east ; the latter gives some idea of the precipitous gorge of the Wad-es-Seyal, and the northern end of the rock of Masada, with its fortified ledges, rises impressively in the left foreground, while on the

[9] See pages 195, 197.

[10] Josephus, *Antiq. Jud.* XIV, 394.

right the investing wall is seen stretching up from the low ground as far as the base of the most inaccessible crags below the Leuke.[11]

These photographs make possible an examination of Silva's works in some detail.

The desert only afforded him loose stones for dry walling, but stout stakes were part of the regular equipment of Roman troops, who could have used them to compact such stonework, if necessary, as well as earth and turf structures as revealed at Cawthorn Camps, Yorks, [12] and depicted on Trajan's Column.[13] Thus the towers along the circumvallation must have been timber framed, and timber walled above, with a solid stone lower storey at least as high as the wall they bestrode, which could serve as a platform for artillery.[14] But no doubt their main purpose was observation and signalling, perhaps of a more advanced type than that employed in B.C. 134-3 at Numantia,[15] and thus they fall into line with the regular frontier signal-towers of the Ist century A.D. and the turrets of Hadrian's Wall. Possibly a timber sentry-walk and breastwork ran all along the wall, as on Caesar's blockade earthworks at Alesia ; supporting stakes would thus be required, for piled desert stones could hardly bear them alone like the Numantine siege-wall with its solid rubble core enclosed by masonry facing.[16] The ruins of the circumvallation have spread to an average width of 12-20 feet, usually some 10 feet wider at the towers, some of which have been recorded as still 2 metres high,[17] and a reasonable mean estimate for the original wall may thus be 6 feet high to the rampart-walk and 10 feet broad, rather smaller, as we should expect, than the average figures (width 4, height 9 metres) at Numantia.[18]

The correspondence in size with the camp-walls at Cawthorn (width 10 feet allowing for sloping front, height to rampart walk 6 feet) is not surprising when we observe that the walls of all the Masada camps closely resemble the circumvallation, and seem to have been

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[11] For photographs taken from the ground, see especially von Domaszewski, *op. cit.* figs. 1102–6, 1109–1113, 1115–1120, and Taylor's edition (Traill's translation) of Josephus *Bell. Jud.* (1847–51), vol. I, p. 232, vol. II, pp. 87, 238 ; letterpress vol. II, pp. cix-cxv.

[12] Richmond's 4th summary, *Yorks. Arch. Journal*, XXIX, pp. 225–231, with diagram.

[13] e.g. scenes XI–XII, XVI–XVII, XX, XXXIX, LX, LXV.

[14] So Schulten (plan VIII, 5) has reconstructed the corresponding type of tower on Scipio's siege-wall at Numantia ; but there seem to be passages through some of the Masada towers.

[15] Appian, *Iberica*, 90.

[16] Schulten, plan VIII, 2. cf. Caesar, *Bell. Gall.* VII, 72, 4.

[17] von Domaszewski, p. 224. [18] Schulten, pp. 32, 82–3.

built to the same specification ; Numantia also provides an instance of this.[19] Where material for sloping-sided earth ramparts was absent, the distinction in build, familiar to students of northern *limites*, between the defences of a camp or fort, constructed properly to resist assault, and the 'travelling' obstacle, essentially a fortified sentry-walk, necessarily disappears.

The sand and rock of the desert made ditches impracticable ; indeed save for that accompanying the palisade which protected the building of the wall, none seem to have been dug at Numantia,[20] but at Masada the nature of the ground made such a palisade largely unnecessary as well as impossible. The investing wall is hardly interrupted except on impassable cliffs and at the passage of watercourses, three of which are guarded by camps, and one, between camps A and C, also by a duplicate wall on the south. Formerly the opening here was apparently narrower, more of the walls still standing in the bed of the Wady,[21] and subsequent damage by flood-water may be presumed.

Before examining the camps in detail we must consider the numbers and composition of Silva's force. Legion X Fretensis is indisputable, but not the auxiliaries. Josephus[22] does not tell us how many Titus left in Judaea, but we have a diploma[23] of 86 A.D. which mentions the following cavalry *alae* and infantry cohorts in the province ; Ala Veterana Gaetulorum, Ala I Thracum Mauretana, Cohors I Augusta (Praetoria) Lusitanorum, Cohors I Thracum) miliaria), Cohors II Thracum (equitata), Cohors II Cantabrorum. Now since there are six auxiliary camps at Masada, it is tempting to allot each of these six units to one camp, but no diploma can be trusted to enumerate all the troops in a province at its date of issue, and Silva before investing Masada had detached part of his force to garrison the surrounding country ; his full muster was therefore more than six auxiliary units, as obviously he would not split his legion. Moreover, troops may have moved between 72 and 86, especially as we know the elder Trajan conducted fighting against the Parthians in 76-77.[24] The sizes of the camps suggest two miliary and four quingenary units (respectively 800—900 men and 450 or more), whereas the diploma gives one miliary and five quingenary ;

[19] Schulten, p. 100.
[20] *ibid.* pp. 25–37 (correcting Appian *loc. cit.*), 101, 191.
[21] Rey, *op. cit.* pp. 284, 294. Hence Schulten's unsatisfactory plan VIII. 7, cf. p. 87.
[22] *Bell. Jud.* VII, 5.
[23] C.I.L. III, p. 857, dipl. XIV.
[24] Dessau, 8970 : Pliny, *Panegyricus*, 14. 1.

it is therefore only likely to tell us some of the corps present. Full paper strength is rarely found in the field, and all must have seen much recent campaigning, so the auxiliary force at Masada may be safely put at under 3000 men. Similarly 3500 is a generous estimate for the legion, which even three years before had needed a special draft of non-citizen recruits,[25] and the size of camps B and F1 (about 7 acres) conforms to this view. Thus Silva operated with a force of roughly 6000 men.

Its camps are not to be taken for permanent forts ; we shall not find the same towered gateways, solid granaries, ' commandant's house', and peristyled headquarters. So-called ' semi-permanent ' camps, again, afford only inexact parallels ; at Numantia, where the army had to endure a Spanish winter, we have fairly regular masonry buildings ; in Scotland, the set stone walling found at Burnswark[26] must be unconnected with any siege, while the early timber barracks at Ardoch and Inchtuthil show a more settled occupation[27] than is comparable with the present case. In fact, such timber construction, typified at Haltern in Lower Germany, characterizes winter-quarters, which regularly even in emergencies consisted at least of huts[28] ; marching camps, on the other hand, being fortified enclosures containing tents only, usually present no internal features to the excavator,[29] still less to the observer.

The Masada camps were obviously not built to winter in, and everything points to the use of the regulation leather tents, but their interior is covered with orderly ranges of loose stones on a recognizable plan. The explanation is, as von Domaszewski[30] saw, that the lines were laid out in rows of piled stones, and the tents when pitched were thus enclosed by low rough sleeper-walls. Though continuous lengths of this type of stonework are not wanting, we can often see the area of each tent separately outlined in boulders ; hearths and other fixtures were similarly stone-bedded. The air-photographs consequently give us a unique series of views of the lay-out of the camps, though the stone setting is by no means everywhere intact.

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[25] Dessau, 9059.

[26] Probably of a headquarters building : see pl. III in *P.S.A. Scot.* XXXIII (1898), pp. 198–249.

[27] *J.R.S.* IX (1919), p. 111 ff.

[28] cf. Tacitus, *Annals*, XV. 6, 2 : ' hibernavisse raptim erectis tuguriis '.

[29] e.g. the ' great camp ' at Newstead : Curle, *Roman Frontier Post*, p. 15 ff.

[30] p. 225.

Such a use of rough stonework to establish the plan of a camp and form a protection round the bottoms of the tents is probably paralleled by the low turf walls existing at Cawthorn, which Mr Richmond tells me are definitely not the remains of turf hutments.

Further, when the scene of the disaster of Varus in Germany was visited six years later by a Roman army, the size of his force could be established by measuring the headquarters of his first camp,[31] which was, like that at Cawthorn, certainly only temporary[32]; there must have been remains more durable than the bare sites of tents on that sodden ground, and probably here too there was analogous turfwork.

The camp plans so revealed at Masada make valuable comparison with the more permanent legionary and auxiliary stations of the Empire, with Republican work as at Numantia, and with the descriptions of camps given by ancient writers. Of these for the Empire we have the so-called Hyginus (2nd century), Vegetius (4th century, but using earlier sources), scattered references in historians, and a contemporary sketch by Josephus[33]. However, Hyginus alone deals technically with castrametation, and his extant chapters are chiefly taken up with a large camp for a whole composite army, under an emperor's command, whereas at Masada each camp is evidently for one unit.

Still, though construction varied, all Roman camps and forts, until the later Empire, present the same type of plan, originally based on the actual formations of troops; and the normally oblong outline, the main streets at right angles, each with its gate, and the central headquarters are familiar characteristics.

Much of the ground-plan of camp B, as partially reconstructed in fig. 2, appears in plate IX (not, however, quite a vertical view). The camp is a parallelogram of some 600 by 500 feet, slightly deflected from the rectangular, with the usual rounded corners. Any shape was permissible, as Vegetius states,[34] but both he[35] and Hyginus[36] recommend a proportion between length and breadth of 4 : 3, and many Imperial camps conform at least as nearly to this as camp B. The eastern corners, away from the enemy, have no towers, but one stood at the south-west, and perhaps also one at the north-west, now eroded.

The four gates (fig. 2 : 1, 2, 3, 4) are guarded by *claviculae* or flexures of the wall, a not infrequent feature. They are here internal,

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[31] Tacitus, *Annals*, I. 61. 3.
[32] Dio, LVI. 21. 1.
[33] *Bell. Jud.* III. 70–109.
[34] I, 23. [35] III, 8. [36] ch. 21.

as Hyginus[37] advises; we may compare the camps on Trecastle Mountain (S. Wales), though in Britain external *claviculae* preponderate.

The headquarters (5) or *praetorium* lies on the west of the main street (*via principalis*), and faces eastwards down to the *porta praetoria*, which is consequently turned away from the enemy, whom Hyginus[38] directs it always to face, but his recommendation that the *porta decumana* at the other end should be on higher ground is thus followed, and Vegetius[39] gives and perhaps prefers an alternative rule, no doubt dictated by the science of augury,[40] that the *porta praetoria* should face east; this could here be observed, as camp B was a preliminary one, and the enemy were not at close quarters.

The *praetorium* (about 100 feet wide), though partly ruined, is of extreme interest; it is not of the peristyle form typical of Imperial permanent camps, but is centred on a big quadrangular enclosure which evidently held the great headquarters tent familiar on Trajan's Column.[41] The *praetoria* of marching camps thus preserve affinity with Fabius' headquarters building at Numantia and the plan of the old Roman house from which it was derived.[42] That this enclosure was not an open court, but combined *atrium* with *tablinum*, is shown by the large stone base of a *triclinium* in its centre; such dining-tables for campaigning generals and their officers were later abolished by Hadrian.[43] Silva's own quarters west of this have been denuded, but on either side of the eastern headquarters entrance are Hyginus' sites for the *auguratorium* and *tribunal*,[44] which we must now consider.

The latter, the general's public platform and judgment seat, is unmistakably the 15-foot solid stone square (6) on the south, with a projection at the back, presumably for ascent, for though its height is now at most 1 foot,[45] there was probably a wooden superstructure. The only other field *tribunal* of the Imperial period known at Cawthorn,[46] was perhaps in the opposite position[47]; it was an oblong turf mound about 22 feet by 12 feet 6 inches, with short end facing the *via principalis*, where troops would stand to be addressed. Trajan on the Column

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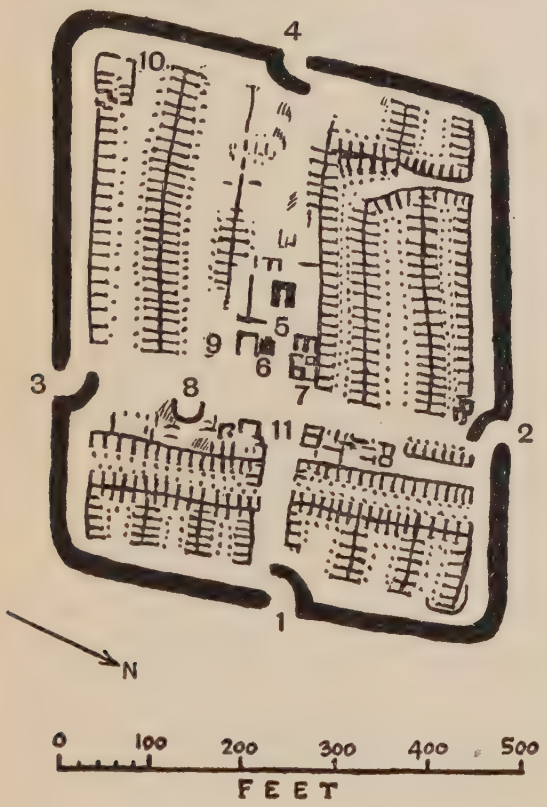
[37] ch. 55. [38] ch. 56.
[39] I, 23. [40] von Domaszewski p. 225.
[41] e.g. scenes VIII and LIII: cf. Josephus, III. 120.
[42] Schulten, pp. 128–132. [43] *Vita Hadriani* X: Dio, LXIX. 9.
[44] ch. 11. [45] von Domaszewski, p. 226.
[46] *Yorks. Arch. Journal*, XXVIII, pp. 26–27.
[47] Thus the meaning of Hyginus' 'right' and 'left' remains uncertain, despite von Domaszewski, p. 226.

harangues from an oblong turf *tribunal*,[48] with his staff behind him and standards ranged down the long side.

At Numantia, the Peña Redonda camp had a round *tribunal*, not by the *praetorium*, but 50 feet clear of the camp lines in an open



KEY

1 Porta praetoria.
2 Porta principalis dextra.
3 Porta principalis sinistra.
4 Porta decumana.
5 Praetorium, with triclinium in centre.
6 Tribunal.
7 Auguratorium.
8 Schola.
9 Position of standards.
10 Perhaps valetudinarium (hospital).
11 Scamnum (tribunes' quarters).

FIG. 2. MASADA: SKETCH FOR A RESTORATION OF CAMP B

space[49] ; however, we need not doubt[50] whether sufficient audience room was afforded by the certainly normal site on the *via principalis*.

The *auguratorium* or *augurale*, where the general observed omens by the immemorial tradition of Roman military routine, must be represented by at least part of the complex of walls (7) north of the headquarters entrance, but not necessarily the whole,[51] as the likelihood

[48] e.g. scenes X, LXXVII, CIV, CXXXVII.
[49] Schulten, p. 155.
[50] As *ibid.* p. 197.
[51] As von Domaszewski rashly assumes, pp. 226–7.

that part of the general's guard was also quartered here [52] is supported by the analogy of Peña Redonda,[53] and guardrooms were correspondingly placed in peristyled headquarters, as at Neuss.[54]

It is known that altars stood before the headquarters[55], but Hyginus' description is corrupt,[56] and no help is forthcoming from this camp, where the absence of remains points to the use, as on Marcus Aurelius' Column,[57] of portable tripods, for which the rectangular enclosure just south of the *tribunal* seems a suitable site.

A regular feature of Roman permanent headquarters is the shrine of the standards, which were sacred as bearing the emperor's effigy ; it usually faced the middle of the central courtyard, or, as at Neuss after 70 A.D., was in a separate building fronting the *via principalis*,[58] but in temporary camps the matter is different. The legionary ' eagle ' was the responsibility of the *primus pilus* or senior centurion, and when encamping both it and the 30 manipular standards were massed in the lines of the first cohort,[59] which he commanded. When more than one legion occupied a camp, each maintained this arrangement separately ; the standards of all were not brought together, this being on active service a signal of mutiny.[60] Now in a camp for several legions Hyginus places at least half the total of their first cohorts at the sides of the *praetorium* (otherwise devoid of legionaries), and here presumably the first cohort lay in a single-legion camp ; the *primus pilus* would thus be next to the headquarters, and all the standards with him, in the most central position possible, as Vegetius[61] directs in all camps for longer use than one night. Further, the *scholae* for first cohorts, open spaces where the legions' orders were given out, are put ' over against the eagle ' by Hyginus,[62] in the officers' lines, which were on the *via principalis* facing the *praetorium* and its flanks ; and just in that position there is in this camp a semicircular enclosure (8),

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[52] Tacitus, *Annals*, II. 13. 1 : (Germanicus) ' egressus augurali per occulta et vigilibus ignara ', is uncertain evidence against this ; Silver Latin could use *augurale* loosely for the whole *praetorium* (Quintilian, VIII, 2. 8).

[53] Schulten, p. 129.

[54] See note 58.

[55] Tacitus, *Annals*, XV. 30. 1.

[56] ch. 11.

[57] e.g. scene XXX.

[58] Immediately north of the headquarters ; see schematic plan in *Bonner Jahrbücher*, 111–112 (1904), p. 89.

[59] So at least Hyginus ch. 3.

[60] Tacitus, *Annals*, I. 18. 3, 28. 9. The events of *Histories*, III. 13 are to be similarly explained.

[61] III. 8.

[62] ch. 20 ; cf. ch. 15 and p. 210 below.

convincingly identified by von Domaszewski as the *schola*. The standards and *primus pilus*' quarters must thus have been on the *via principalis* opposite this, immediately south of the *praetorium*, exactly fitting our location of the first cohort, though, as this was of double size, half of it probably lay in a corresponding position on the north.[63] Though the site (9) is unhappily denuded, the standards clearly stood at the end of a long row of tents, separated by a narrow roadway from the headquarters. The latter on this side are edged by a narrow strip where more men on guard may have lain, corresponding to the *statio* of Hyginus.[64]

Behind the *praetorium* must have been the *quaestorium*,[65] and in this quarter also perhaps the hospitals for men and beasts, the workshop, and the quarters of veterans and other details, placed by Hyginus[66] behind the first cohort ; however, he also directs the workshop not to be near the hospital, and possibly the latter is the enclosure (10) at the south-west corner of the camp.

To deal now with the legionaries' quarters, the space regularly allowed for a tent was 10 feet square, with a spare foot either side, 14 feet in front of each being allotted to arms and a pack-animal ; the ranges of stones conform reasonably well to these dimensions. The 6 centuries of a cohort were normally paired, to form a *striga* or double row of tents facing inwards across a 12-foot clear interval.[67] The lines nearest the east wall, however, which evidently held one cohort each side of the *via praetoria*, are arranged so that each maniple (or pair of centuries) occupies three sides of a rectangle ; the cohorts next to these lay with maniples end to end to form single long *strigae* perpendicular to the road, though a tent or two appears across the ends. The cohorts in the former group seem to have had 43 and 41 tents, the latter 36 and 31. At the other end by the *porta decumana*, where the tenth cohort lay,[68] three sides of a rectangle is again the formation, but the middle part of the camp shows regular straight *strigae*, parallel to its long axis. On the north side there are tent-sites irregularly across their ends, but on the south, there being no *via quintana* crossing the camp behind the

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[63] The standards could probably be on either side ; cf. the position of their shrine at Neuss, see p. 208 and note 58.

[64] ch. 9.

[65] *ibid.* ch. 18. It was used for hostages, spoils of war, etc.

[66] ch. 4.

[67] *ibid.* ch. 1.

[68] *ibid.* ch. 18.

praetorium, the lines are uninterrupted. Distribution between cohorts here is partly uncertain, but we can give 42 tents each to the two northernmost, and 45 to the southernmost. Three cohorts of the ten thus remain indeterminate, one being the double first, but the complement per tent (*contubernium*) was eight men,[69] and counting in the centurions' tents the strength of the located cohorts ranges roughly from 200 to 300 men,[70] their paper strength being 480. An estimate of under 3500 men for the whole legion is therefore likely, if we allow for guard, details, veterans, and perhaps for the legionary cavalry, nominally 120 strong, who were certainly present in 67,[71] and must have encamped together, though reckoned administratively among the infantry.[72] There is an isolated row of 7 tent-sites at the north end of the *via principalis*, with a space behind it suggesting horse-lines, which is suitable and not otherwise explained.

South of this, facing the headquarters, as in Hyginus,[73] are the irregular traces of the 6 tribunes' quarters, some 40 feet deep (11), presumably three each side of the *via praetoria* ; the *schola*, as we have seen, adjoins, and the area south of it being denuded, we have accounted for all we can of the camp, unless two thick-walled structures just inside the north gate are artillery-emplacements (*ballistaria*).

The regularity of the lay-out, though not approaching that of permanent stations, compares favourably with that of the Numantine camps, considering they were stone-built. The measurements given in Hyginus are roughly speaking a norm throughout, though his strict grouping into *strigae* is partially disregarded, and the main streets average 40 feet wide, the *intervallum* space surrounding the lines 20 feet, whereas he gives both 60 feet.[74] The roomy quarters allotted in permanent camps to centurions and perhaps junior officers are absent. Hearths appear before each tent,[75] and we cannot be sure that the pack animals were really picketed here all the time; they may have been working in the constantly travelling convoys.[76]

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[69] *ibid.* ch. 1.

[70] There were thus 30–40 men to a century (nominally 80) ; cf. 31 effectives + 9 details present in a century in an Egyptian papyrus of 90 A.D.: Parker, *Roman Legions*, p. 208.

[71] Josephus, *Bell. Jud.* III, 82.

[72] Parker, *op. cit.* p. 211.

[73] ch. 15.

[74] ch. 14.

[75] cf. von Domaszewski, p. 232.

[76] see p. 199.

Camp F1 closely resembles camp B in most visible respects, but it is more rhomboidal, and the *via praetoria* is asymmetrically placed. The lines can be traced on a similar plan, and there are several more massive structures near the walls which may be *ballistaria*, but the headquarters and most of the rear of the camp has been dismantled, evidently to form the enclosure F2, which plate VIII most clearly shows to be a later structure. The numerous towers along its walls suggest greater permanence, and it can hardly be explained otherwise than as the camp of the garrison left behind after the siege. Josephus puts this 'in Masada', but this cannot be pressed—the citadel could not in any case have been immediately fit for decent habitation. Had an auxiliary unit been left, it would presumably have been that occupying camp E, and the site inside F1 surely indicates a legionary detachment (*vexillatio*). The interior may be reconstructed as the irregularly grouped lines of a cohort, which may well be correct, but plate VIII shows some tent areas with annexes possibly for horses, and the *vexillatio* was perhaps composite, including cavalry. This camp, with its abnormal plan and abundant space, is anomalous; the photographs are clear and a headquarters may be identified, but we must now pass on to the auxiliary camps.

Camp E, lying nearest the enemy, alone has *claviculae*; it is roughly 200 feet square and fits a quingenary cohort, but its interior is hardly sufficiently preserved for a detailed study. Before leaving the Leuke, we should notice the remains of several small outworks in front of the camps, and also of earlier buildings and enclosures, the relics presumably of Antigonus' army, as no Roman camp-plan is discernible.

Camp G is of irregular shape; its large area, approaching 100,000 square feet, indicates a miliary cohort, and *strigae* are visible. The exceptionally massive south-west projection may indicate *ballistaria*.

Camp H, a small rhomboid, is obscure in plan save for thick-walled central enclosures, but its size, 180 by 150 feet roughly, indicates a weak quingenary unit.

Camp A, a rectangle of some 200 by 170 feet, has three apparent *ballistaria* along its north wall, a tower there and opposite, and only one obvious entrance. A central headquarters is visible, and six symmetrically placed *strigae* of 8 tents or less, each plainly for one of the six centuries of a quingenary cohort. The tent-enclosures resemble the legionaries', but the auxiliary *contubernium* was 10 men, not 8,[77]

[77] Hyginus, ch. 28.

and the centuries here seem to have been nearer full strength (probably 80 men), if we balance the *strigae* of less than 8 tents with guns' crews quartered in the *ballistaria*.

Camp C (280 by 250 feet) held a miliary cohort. It was planned on the ground with precision by von Domaszewski,[78] who not only identified the sites, but assured himself of the comfort of the stone beds of the garrison. The camp is symmetrically quartered by roads, and the central headquarters is faced by a semicircular *schola* like that of camp B. The *strigae* run north and south, and seem to fit the required 10 centuries, though Arab enclosures, unmistakable from the air, have somewhat obscured the plan.[79]

Indeed, it is possible that these exist undetected in other camps, and for this reason the identification of *ballistaria*, for which they might most easily pass, has here been tentative throughout. However, this camp has a projecting pair at the south-west corner which seem indisputable. They are massive stone squares recalling examples at Numantia[80] and German forts, and contrast with the rounded form and solid earth construction of those at Burnswark[81] and Cawthorn.[82] Unfortunately we cannot on present evidence estimate the numbers or calibre of Silva's artillery, though it was obviously shared among both auxiliaries and legionaries.

There are two small structures outside camp C on the east, and camp D, the last to be considered, has an eastern outwork connected with it by a narrow wall; inside, Arab enclosures are again to be suspected, but the plan apparently resembled that of camp A, which is of equal size. The garrison was thus a quingenary cohort, unless this site on flat ground was held by an *ala* of cavalry.

Other eyes will no doubt elicit further evidence from the photographs of these camps, but it has seemed unwise at a first publication to press every detail into a ready-made interpretation. The present article lays no claim to having exhausted the possibilities; to complete the picture we still need vertical air-photographs of each of the Roman camps and of the citadel, taken from a low altitude.

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[78] pp. 231–233 and fig. 1114.

[79] von Domaszewski noticed one, but identified the others as a magazine and a centurions' dining-tent. His theory of centurions' tents all grouped together is doubtful.

[80] e.g. Schulten, plan XXXIX, nos. 33–40: cf. pp. 210–11.

[81] *P.S.A.Scot.* XXXIII, pl. VI, fig. 7.

[82] Described to me in a letter by Mr Richmond.

The siege of Masada marks an interesting epoch in the history of military engineering. Blockade by circumvallation, the approved practice of Greek citizen armies, became almost obsolete when the heavy machinery of assault introduced into Sicily by the Carthaginians was adopted and improved by the Macedonian kings, and enlarged to unwieldiness by Demetrius Poliorcetes. The Roman tradition, however, was typically for the combination of blockade with assault.

At the close of the Republic we find them treated as separable alternatives, and a theory of intensive assault without investment, natural, as in Hellenistic warfare, to abundant manpower and resources, was Caesar's legacy to the early Empire. But in the Jewish war it failed, and at Masada we have a deliberate reversion to the combined method. Thereafter blockade lines, though unnecessary in small scale affairs like Burnswark,[83] became regular; Trajan had extensive field-works before Sarmizegethusa, and at Hatra in Mesopotamia, assailed both by him and Septimius Severus, a circumvallation is attested by air-photography.

Such a work is essentially a fortified frontier returning on itself, and it was significantly the Flavians, schooled in the lessons of the Jewish war, who began the frontier consolidation which produced the great barriers of the German and British *limites*. The auxiliary garrisons of their fortified lines bear the identical relation to a legionary striking force that Silva's dispositions exemplify. There is an intimate relation between the leaguer of Masada and Hadrian's Wall.

NOTE. The account of Masada by von Domaszewski here referred to throughout (*De Provincia Arabia*, III, pp. 220–244) contains a bibliography of previous travellers with quotations in full.

[83] That there was no circumvallation here, as Schulten and others have thought, is confirmed by Collingwood, *Antiquaries Journal*, VI, pp. 83–4.

Notes and News

SOME SUGGESTIONS

The Editor naturally has a good many articles submitted to him for publication in ANTIQUITY. Most unwillingly he is obliged to return some of them as unsuitable, because they are either too technical, too slight or even too long, or for some other good reason. It has occurred to him that it may be worth while to suggest some subjects for articles, and he has therefore compiled the following notes ; but he wishes to state quite clearly that in every case a thorough knowledge of the subject is essential, together with the use of first-hand sources.

(1) ARCHAEOLOGICAL TERMS. A good deal of confusion exists in the terminology employed by archaeologists, and a number of spurious Celtic words have crept in to add to the confusion. For instance ' dolmen ' and ' cromlech ' are used in Britain to describe the same object. Neither word is original. An examination of the earliest instances where some of these words have been used would show that they were inventions without any local roots. Some other terms which might be dealt with are cist, menhir, tumulus, barrow, camp, dyke, ditch, moat, coit, cairn and carn, lynchet. The *Oxford English Dictionary* and the *Dialect Dictionary* would provide most of the raw material.

(2) THE BATTLE OF EDDINGTON. This was fought in 877 between Alfred and the Danes, who were heavily defeated. Abundant evidence exists to prove that the site of the battle was at Eddington near Westbury in Wiltshire. The evidence is both topographical and philological, but needs to be classified and set down clearly in the light of modern knowledge. The philological argument for this identification is quite overwhelming. The main authority is Asser's Life of Alfred, and the places mentioned there can nearly all be identified. Stevenson's edition (Oxford, 1904), with abundant notes, is the best. Local knowledge and a sense of topography are both essential.

(3) WANSDYKE—KING ARTHUR—AURELIUS AMBROSIUS. It is tempting to associate defensive earthworks such as Wansdyke, Bokerley Dyke or the Cambridgeshire dykes with some single individual of

considerable organizing power. (There can be little doubt that the majority of these dykes were erected at one time). Such an individual is to be inferred from the legends with which the name of Arthur is associated. King Arthur, however, remains little more than a name, and few of the places associated with him can be identified with certainty. Aurelius Ambrosius is another shadowy figure who may be responsible for some of these defences, and it has even been suggested that he was identical with King Arthur. The main facts about King Arthur have recently been admirably summarized by Sir E. K. Chambers (see ANTIQUITY, II, 114), but there is room for a paper which will deal with the matter from a slightly different angle. See also 'Arthur and Athelstan', by W. G. Collingwood, *Saga-Book of the Viking Society*, vol. x, 1928.

(4) DEFENSIVE DYKES near Roman towns. In the immediate neighbourhood of Chichester, Colchester, Silchester and some other Roman towns are a series of dykes. There is reason to suppose that they may be of the same character as those mentioned above, but their age is still quite uncertain. The exact course of the dykes needs to be investigated on the ground and plotted on the 6-inch map, and the resulting plans to be studied by one who is familiar with the elementary principles of military tactics.

(5) PREHISTORIC DATING. The bases of chronology in Europe are founded on the chronological systems of Egypt and Mesopotamia by means of a series of links. Roughly speaking north-west Europe is linked to these systems (1) through Spain, (2) through Sicily, (3) through Central Europe and the Aegean; and there is room for an article stating in summary fashion exactly what the links are which enable these comparisons to be made. These, of course, consist of objects in one area imported from another, enabling the two to be synchronized.

(6) THE FISHERTON BRICK-EARTHS. During the middle of the 19th century some brick-earths were worked for commercial purposes at Fisherton, a suburb of Salisbury. The fauna yielded by these deposits was rich and varied, and included remains of marmot, ringed lemming, goose, duck, wolf, fox, reindeer, rhinocerus, mammoth, hare, cave lion, cave hyaena, red deer, bison, musk sheep; together with a large number of land and freshwater molluscs (30 species). At least one palaeolithic implement was found, now in the Salisbury museum. It should now be possible, in the light of recent discoveries in the caves of Mendip, the Wye and Derbyshire, to define the relationship that

exists between these brick-earths on the one hand and the cave-deposits on the other. It should also be possible to discover where the brick-earths fall in the pleistocene river-deposits, particularly the implementiferous gravels of the Hampshire basin. The problem demands a wide range of knowledge and a general, not merely local, treatment. The following are some necessary sources :—'On the recent discovery of flint implements in the drift of the valley of the Avon', by H. P. Blackmore, *Wilts. Arch. Mag.* (July 1867) x, 221–33 (with other references); 'A sketch of the geology of the Quaternary Deposits at Salisbury', by Joseph Prestwich, published in 'Some Account of the Blackmore museum, Salisbury', Devizes [1868], pp. 22–35; 'On the pre-historic mammalia found associated with man in Great Britain', by W. Boyd Dawkins, ib. id. pp. 49–57; 'Festival Book of Salisbury', 1914. (I am indebted to Mr Frank Stevens, F.S.A., Controller of the Salisbury, South Wilts and Blackmore museum, for some of this information).

(7) Biography of Stukeley. Stukeley was one of the first field archaeologists and his name will always be associated with Avebury and the prehistoric remains on Salisbury Plain. He was the discoverer of the Stonehenge Avenue. He left abundant manuscript materials, most of which are now in the Bodleian, but no adequate account of his life has been published. The raw materials, besides his own published works, will be found in the letters, edited by W. C. Lukis (Surtees Society, 1882–7, 3 vols.) The twenty diaries, and most of the letters, from which the Editor of the Surtees volumes made selections only were acquired by the Bodleian in 1924 (see Antiquity, I, 484, referring to the *Bodleian Quarterly*).

(8) Names of Hundreds and sites of their Court-meetings. A good deal of attention has been given to this matter, but no attempt has been made to study the subject within a definite and fairly extensive region though the materials for this exist. It would be worth while to take an area such as Salisbury Plain or the Marlborough district, and identify, as may easily be done with a little research, the areas covered by the Hundreds at a given date, and the places adopted for the meeting of the Courts. Having done this it would be interesting to examine these spots both etymologically and in the field, in order to determine their character. Attention might also be given to their relationship both to the parishes in the Hundred and to any relics of an earlier civilization that might have survived. (Cf. for example *Wilts Arch. Mag.* xiii (1872), 105–18).

(9) Pigs of Lead and Roman Roads. A number of inscribed pigs of lead have been found in different parts of England, the majority in the immediate neighbourhood of mining areas. Those found away from them, however, would naturally have been lost during conveyance along a road, often a made Roman causeway-road; and such may therefore be adduced as evidence that the road existed at the date to which the pigs can be ascribed. It is possible that there is insufficient evidence available from this source to add appreciably to our existing knowledge; but in any case a complete list of such pigs found in Britain, with a distribution-map and bibliography, would be useful, to supplement and bring up to date that published by Prof. W. Gowland (*Archaeologia*, 1901, LVII, 402–3). The Ordnance Survey Map of Roman Britain indicates lead-mining areas and would form a suitable basis for such a distribution map. The *exact* sites should, of course, be indicated; sites which cannot be plotted exactly (through a defective record) being indicated by a different symbol. The materials for such a list exist already in Professor Haverfield's articles in the Victoria County Histories (especially Derbyshire, 1905, I, 227–33; Somerset, 1906, I, 334–44; Shropshire, 1908, I, 263–5). Since then three more have been found, two in 1918 at Bitterne (Clausentum) near Southampton (*Proc. Soc. Ant. Lond.*, 2 ser. XXXI, 36–9), and part of one at Richborough (*Ant. Journ.*, III, 62). Professor Gowland's article deals with the early metallurgy of lead in general; and his views should be compared with those of Professor Henry Louis in *Chemistry and Industry*, 16 and 23 March 1923.

(10) Jack the Giant Killer. A number of folk-tales still current a hundred years ago in Cornwall were written down and published by Dr Robert Hunt in *Popular Romances of the West of England* (3rd edition, 1881). These tales contain abundant information about life under the primitive conditions of earlier times. Some of the strands of the fabric are plainly prehistoric, others medieval. No attempt has ever been made to disentangle them in the light of our archaeological knowledge of the prehistoric West. Yet one tale contains an obvious description of a prehistoric hill-fort and its surrounding pastures.

LONG CAIRN AT CAPEL GARMON

The following note, and the illustration which accompanies it, have been contributed by Mr Wilfrid J. Hemp, F.S.A., formerly

H.M. Inspector of Ancient Monuments for Wales, and now Secretary of the Royal Commission on Ancient Monuments in Wales :—

The photograph shows a chambered long cairn at Capel Garmon in North Wales as it was in the summer of 1928 on the conclusion of the work of preservation carried out by H.M. Office of Works. The distant mountains on the left form the eastern fringe of Snowdonia, and between them and the monument lies the deep gorge of the Conway valley.

The cairn lies at a level of 800 feet on a broad terrace, and, as is often the case in North Wales, the position seems to have been chosen so that the mound itself would have been inconspicuous, being overshadowed by one of the many small outcrops of rock that are characteristic of the district, and themselves often resemble artificial mounds. The photograph was taken from this outcrop.

The monument, which is one of a group of long barrows or cairns found in the Conway valley on both sides of the river, has suffered much damage, as two of the three chambers have been unroofed and the one which still retains its cover-stone was used as a stable for a pony during the first half of the 19th century. In the early ' fifties ' the owner carefully examined it, but all that was then revealed was a series of three chambers in line approximately east and west, and a passage leading southwards from the central chamber, which was sub-divided by two stones in the form of a T.

When the monument was transferred to the Office of Works many of the uprights were in a very insecure condition, and the exceptionally well preserved dry walling was rapidly disintegrating. The problem of securing the original work without altering its character or destroying any evidence of the constructive methods of the builders was a far from easy one. The dry walling had been so carefully and cunningly built in the first place that failure was generally due to the decay of individual stones; these were replaced, and the edges of all new ones were marked with small pits to distinguish them from the old. In a few places the movement of the uprights had so disintegrated the walling that it had to be rebuilt stone by stone. Here again the limit of the new work in each case was clearly indicated by a series of pit-marks.

In the course of the preservation, evidence of an 'internal wall' of dry built masonry was discovered, completely surrounding the chambers at a distance of about six yards in from the edge of the mound. At the eastern end it curved inwards as shown on the photograph, forming a ' false entrance ' between two ' horns ' similar to those found in several of the long barrows in the Cotswolds.

A line of stones (clearly visible in the photograph) has been placed on the surface of the mound to indicate the position of the wall. Outside all along its foot was a scattered line of pebbles of white quartz ; and it was proved beyond doubt that the wall had never been exposed since the monument was completed, nor had been there any indication of the existence of the false entrance.

The monument was approximately dated to the early part of the second millennium B.C. by the discovery of fragments of two beakers in the passage, together with one piece of rough black pottery which must for the present be termed neolithic. There was also some evidence of the use of the passage for ceremonial purposes, as the mark of a fire was found in it just outside the entrance to the chamber. Moreover this part of the passage was wider and roofed by a flat stone, whereas the outer part was covered by a corbelled vault.

All the evidence tended to prove that the passage was closed up with the greatest care by the builders of the monument, and if ever it was reopened it must have been by means of a forced entrance at a higher level in the cairn. A detailed account of the archaeological results of the work was published in *Archaeologia Cambrensis* (1927) LXXXII, 1–43.

DECIPHERING PALIMPSESTS

What the air-photograph does for the ' palimpsest ' of the English countryside, ultra-violet rays do for the thing itself. The following interesting account of a new method has been contributed by Mr Leonard V. Dodds :—

Owing to the labour and cost of production, parchments used in olden days for writing upon were not destroyed when time had rendered a document worthless. Instead they were carefully cleaned by chemical or mechanical means and used a second, and even a third time. In many cases the earlier writings would be of much greater historical interest than the superimposed and visible text if only it were possible to read them, and this, strange as it may seem, can now be done. By using the method developed from the researches of Prof. G. R. Kögel of Vienna, writings which were erased hundreds of years ago can be read, and photographs taken for permanent record, and when the method is more widely used a considerable amount of material will be available which may be of the greatest historical importance.

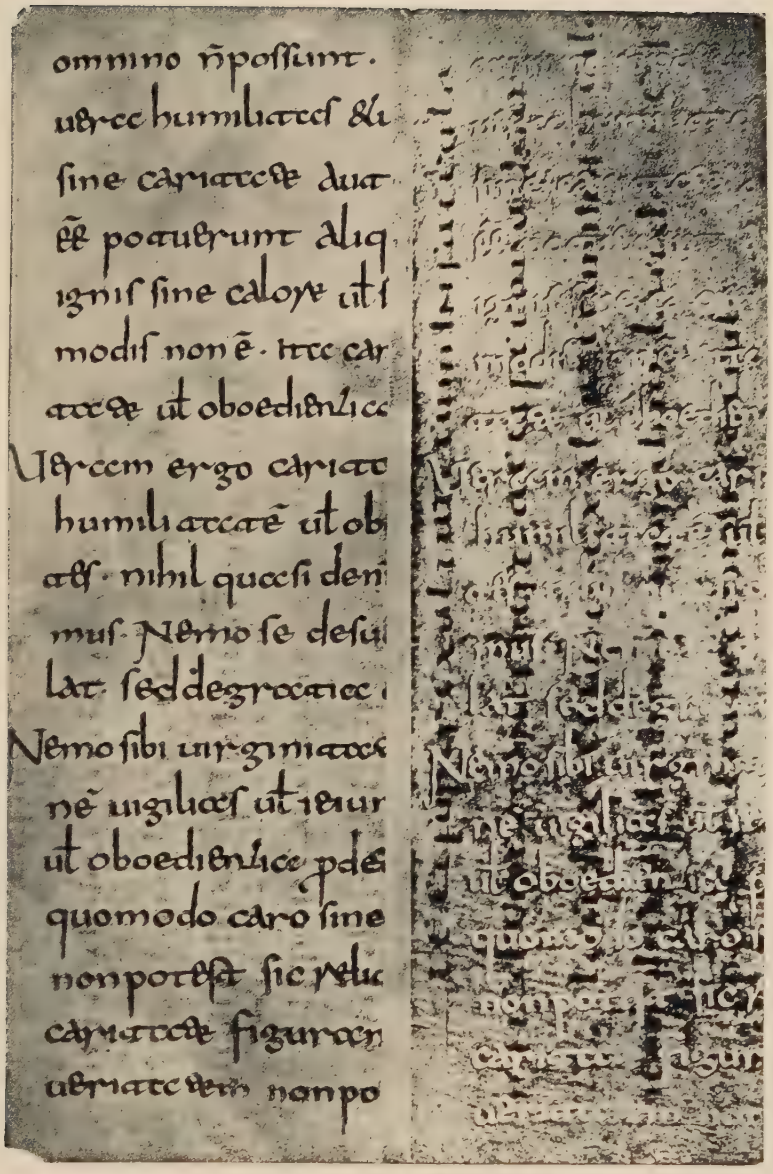
Ultra-violet rays are the agent by which these palimpsests are

deciphered, and they are generated by a lamp of the familar mercury vapour type. In this instrument a direct current of electricity is passed through the vapour of molten mercury contained in a quartz generator, and electrons in the form of ultra-violet energy are driven off similarly to X-rays. The burner is housed in a box-like structure with suitable arrangements for observation and insertion of the camera lens, and all rays emitted by the lamp other than the ultra-violet are screened from the subject examined by the provision of a special filter which is permeable to this group only. Consequently the manuscript is illuminated by a beam of invisible ultra-violet rays only. In some lamps a solution of copper-sulphate and a deep orange dye, nitroso-dimethylanaline, is used to make the filter, and this is contained between sheets of uviol blue glass, but in the Hanovia apparatus, one of the most widely used, this type of filter has been superseded entirely by a new glass, almost black in colour, which transmits the ultra-violet rays only.

When examined beneath these rays various substances, including many dyes, fluoresce distinctly, and each differing substance exhibits a characteristic colour. When a substance capable of fluorescing is excited by filtered ultra-violet these invisible rays are changed into visible light of longer wave-length and a curious glow, to which the term fluorescence is applied, is seen.

When an old manuscript is examined in this way, the tints and dyes left in the parchment from the earlier writings fluoresce distinctly from those of the visible text and from the parchment itself, and the palimpsest can easily be distinguished. By using a special filter the later writings may be eliminated and a photograph taken of the earlier script only, but it is of probably greater interest to see the two texts on one print. The visible writings appear as if in outline type, that is white letters with a narrow black edge, and underneath, or often transversally, may be seen the dark grey lettering of the original text. Slight imperfections due to the varying action of the cleaning process are to be expected, but it is seldom that any difficulties in deciphering occur which are due to visibility.

The accompanying plate shows part of folio 193 of the Codex Sangallensis of Codex Δ. The Codex contains the Gospels in Greek, wanting only JOHN, XIX, 17–35. It is written on 197 vellum leaves, each measuring $8\frac{7}{8}$ inches by $7\frac{1}{8}$ inches, and is complete with prologues, Eusebian Canons and tables. In all probability this manuscript was written in the monastery of St. Gall in the 9th or 10th century. It is said that the scribe was one who did not know the language and who had



ON THE LEFT IS SEEN PART OF THE CODEX SANGALLENSIS PHOTOGRAPHED UNDER ORDINARY LIGHT; AND ON THE RIGHT THE SAME SCRIPT UNDER ULTRA-VIOLET RADIATION SHOWING THE PALIMPSEST TRANSVERSELY

By courtesy of Prof. G. R. Kögel

facing p. 220

otherwise the dolmen was in excellent preservation. It stood about 6 to 7 feet high above the ground level, for I remember it took some climbing for me as a small boy to get on top. The dolmen had a special attraction for me perhaps because of what I felt was the inadequacy of the obtainable explanations as to its builders or its purpose. The legends attached to it were : that it was a ruined druid's altar ; that the stones were dropped down through a hole in the Devil's apron when on his way to Knock Hill to deposit the cloven-stone there (a large glacial erratic) ; and that it is the tomb of a great warrior. Now, not far from the point where the bypath leaves the Banff road and on the flat on its eastern side stand two round tumuli, some 40 or 50 yards apart to the best of my recollection (cf. Geological Survey map of Scotland, sheet 86). Report had it that they mark the site of a great battle in ancient times, which gives its name to the hill and wood at whose base they stand, and that they contain the bones of the opposing combatants, one for each side ; but that the dolmen on the hill was raised to the memory of one of the leaders who was killed in the fray. It is possible that the battle (if battle ever took place) may have been fought on the hill, and that the tumuli (if graves they be) were erected on the plain in whose deeper soil (since Battle Hill is composed of thinly covered granite) it would be easier to place them.

A NEW MALTESE ROCK-TOMB

Dr Zammit sends us the following note :—

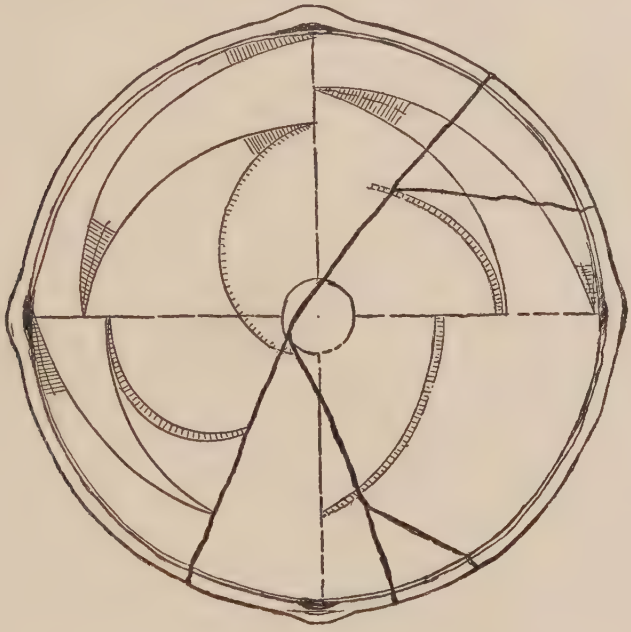
My friend Mr C. Rizzo, C.E., reported recently that in a field at Busbisia, not far from the Torri Falca gap, a human skull and some potsherds had been found in a hollow full of ordinary field soil.

On the 8th of March we examined the site, but as it was late in the afternoon nothing was done except collecting the sherds, leaving the complete excavation of the tomb for a future visit. The potsherds turned out to be of extreme interest and part of a dish was reconstructed as shown in the illustration.

The dish is of a dark brown colour, made of a purified clay, well modelled, well baked, and exquisitely decorated in the style of the ware of the Maltese Stone Age period. The outside surface of the bottom is decorated with incised lines. Two lines cross each other at right angles and divide the disc in four quadrants : at the top there is a bulge in the edge of the disc pierced by a hole, which appears to have only a decorative purpose.

Each quadrant and the outer surface of the sides of the dish are decorated with neatly drawn lines meeting mostly at a point, like a curved v. The lines appear to be filled with a white substance which renders the pattern very distinct on the dark background.

We have here a pre-Phoenician burial with tomb furniture of the Maltese Stone Age type, similar to that which I have described in *The Antiquaries Journal* (October 1928), VIII, p. 479.



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The field in which the rock-tomb was found has other interesting features, which will be investigated. Along one of the walls fourteen megalithic blocks stand in a line for about 60 ft. They are evidently the remains of an old building the nature of which can be judged only by a careful excavation.

STONEHENGE

Mrs M. E. CUNNINGTON sends us the following note, which usefully summarizes one aspect of a perennial problem, and suggests that a re-excavation of some of the barrows referred to is called for :—

The occurrence of chippings of the stones of Stonehenge in barrows

is often referred to as throwing light on the date of the monument, but the evidence never seems to have been stated in full.

Chippings of the ' foreign ' stones are reported to have been found in three round barrows in the neighbourhood. If it were certain that these barrows had never been disturbed, the finding in them of chips of the stones would be almost conclusive evidence that Stonehenge was at least as old as the barrows. This, however, would only necessitate a date in the full Bronze Age, as in each case the primary burial was after cremation. Although in one or two cases evidence of burning has been noticed in long barrows[1] in the south of England, actual cremation does not seem to have been practised until the close of the beaker period. Incidentally it may be said that the discovery of cremation burials in the Aubrey holes and on the floor of the ditch at Stonehenge suggests no greater antiquity.

It is necessary therefore to examine the evidence from the three barrows in some detail. They are Hoare's numbers 16, 30, and 42.[2]

In the paper on Stonehenge in ANTIQUITY for March 1929, Mr Newall quotes Hoare's account of the discovery in barrow 16. Hoare, who was not present at the opening, transcribed his account, with one or two slight verbal alterations, from a letter written to him by William Cunnington, who carried out the excavation.[3] He kept a copy of his letter to Hoare and it is now in our possession ; it has never been published before and is given here in full, and may be compared with Hoare's published account.

' West of Stonehenge is a mutilated flat barrow 76 feet in diameter but only 3 feet high. In page 46 of Stukeley's Stonehenge, he says " And in a great and very flat old fashioned Barrow, west from Stonehenge, among such matters (i.e. human and animal bones) I found bits of red and blue Marble, Chippings of the stones of the Temple so that probably the interred was one of the builders ". I conceive this was the Barrow Stukeley opened, as we discovered a very long section which had been made by the Doctor, and bones of two skeletons which had been interred on the floor, also several pieces of Stag's horns and Animal bones, and what is strange some pieces of Sarsen Stones similar to those at Stonehenge'.

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[1] In five long barrows in Wilts, see *Wilts Arch. Mag.* XXXVIII, 380.

[2] The barrows are nos 4 and 45, Amesbury, and 28 Winterbourne Stoke, in Goddard's list, *Wilts Arch. Mag.* XXXVIII.

[3] *An. Wilts*, I, 127.

' On clearing out the earth from the Doctor's section, I perceived a small heap of whiter earth which on removing we came to the primary interment, a deposit of burnt bones in a fine Circular Cist, with which were found a Brass Spearhead, and brass pin, the former in high preservation. It is rather singular that these burnt bones (a more than usual quantity) should have been undisturbed in a barrow in which were a hundred Rabbit burrows'.

' On removing the earth from *over* [*italics* mine, M.E.C.] the Cist we found a large piece of one of the blue Stones at Stonehenge, same as no. 2, 17, and 19, which Sowerby calls a Hornstone, the finding this as also the Sarsen stones is very singular. Some persons who are acquainted with the soil in these South parts of Wiltshire, might think the finding of pieces of Sarsen stones no uncommon thing. I should have thought the same of this had they been rounded by attrition like all Stones of this species ; but the stones found in this Barrow are pieces chipped off similarly (I am sorry to say) to those that are now daily chipped off from the fallen Trilithon'.

' In regard to the blue Stone we are certain this species is not to be found in the South of Wiltshire'.

' I remember well that on first opening the fine Bell shaped Barrow North East of Stonehenge we also found one or two pieces of the chippings of the Stones. In the Waggon tracks within the area of Stonehenge I have frequently found chippings of several of the Stones both Sarsen and others, and in digging within the area of the work I have frequently found them. In regard to finding pieces of Stonehenge Stone within the Tumuli, the most natural conclusion will be that these pieces were scattered about on the plain, before the erection of the Tumuli under which they have been found. If this conclusion is just, it gives higher antiquity to our British Temple than many Antiquaries are disposed to allow. I confess it has often struck me when opening the Tumuli in the vicinity of Stonehenge, how it was possible that Barbarians (for such one must rank the Britons deposited in these Sepulchres) could raise such a work as Stonehenge'.

The statement that a piece of blue stone was found over the cist (i.e. grave) leaves it quite uncertain as to whether it was in the soil disturbed by the previous investigators or not, therefore this cannot be considered as conclusive evidence that it was associated with the primary burial in the cist, as is sometimes too optimistically stated.

In Mr Newall's quotation from Hoare the word ' over ' has been

inadvertently omitted, and so rather alters the emphasis. The disturbed skeletons were evidently secondary interments, and were quite possibly responsible for the introduction of the stones into the mound at any time subsequent to the primary burial, even as late perhaps as the Saxons.

The bell-barrow north-east of Stonehenge referred to in the letter, in which chippings of the stones were also found, has been thought to be barrow 30, but even this is uncertain, and nothing more is known of the discovery.[4]

In the third instance, that of barrow 42, a piece of diabase that had been scratched out of the mound by rabbits was picked up in 1887.[5]

It thus appears that there is no reliable evidence connecting chippings from the stones of Stonehenge with the primary burial or the original construction of a round barrow.

It may be said that in view of the fact that blue stones were found in the long barrow known as Bowl's Barrow, that this is no longer of importance. But in that case they were in the form of boulders, and as Mr Newall rightly says proves the presence of blue stones in Wiltshire in the long barrow period, but not necessarily their erection at Stonehenge.

All that is known of the discovery of blue stones in Bowl's Barrow has been published comparatively recently and need not be repeated here.[6]

Thurnam records finding a piece of stone precisely agreeing with the altar stone in the long barrow no. 170.[7]

Subsequently, however, William Cunnington[8] writes :—' It is of fine micaceous sandstone, it is true, and so far resembles the " altar ", stone at Stonehenge, but it is of a lighter colour, and so does not " precisely agree " with the altar stone. It is an implement, probably a whetstone, and moreover is entered by Dr Thurnam as having been found in a secondary interment in the barrow. No date, even comparative, can be given to it, and for the purpose of our Stonehenge argument it is useless '.[9] The stone is said to be in the British Museum.

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[4] *Wilts Arch. Mag.* XVI, 66, note 1.

[5] *ibid.* Note 2 and Devizes Museum Cat. pt. 1, 264h, note.

[6] *ibid.* XLII, 431.

[7] *Archaeologia*, XLIII, 425–6, note. Barrow 170 is Wilsford 34 in Goddard's list. For further details of this find see *Wilts Arch. Mag.* XXXVIII, 405–6.

[8] Grandson of the William Cunnington who died in 1810 and was a contemporary of Hoare.

[9] *Wilts Arch. Mag.* XVI, 93.

THE TEMPLES OF PHILAE

The raising of the level of the Aswan Dam will result in complete submergence of The Temples on the island of Philae. At present they are only partially submerged ; but their total submergence is not likely to cause any greater harm, and may possibly cause less, since at present there is considerable friction on the ' wind and water line '. The Ministry of Public Works in Egypt have arranged for an archaeological survey of the area south of Aswan (*The Times*, 16 April, p. 15), which the raising of the Aswan dam will inundate. It is understood that the Egyptian Government have been advised that the present condition of Philae and other monuments in the reservoir is sufficiently strong to withstand the raising of the water-level, but before this is actually done a further careful survey should be made to enable any repairs which are necessary to be carried out. We publish here for the first time two splendid oblique photographs taken by an R.A.F. officer, together with an account of The Temples by Colonel Sir Henry LYONS, F.R.S., from *The Observer*, 24 February 1929 :—

' The Temple of Isis is a temple of the Ptolemaic Age with two series of pylons, one in front of the other, and an area in front of it enclosed by two long colonnades. There is another structure on the island, called variously the Kiosk, and Pharaoh's Bed, which was never completely finished. Besides these two monuments there is nothing very much beyond the flooring blocks of one of two other small temples. The great Temple of Isis is in a fairly good state of preservation.

[' It was Sir Henry who, working for the Public Works Ministry of Egypt, cleared the island of rubbish when the question arose of building the first Aswan Dam. " The first thing at that time ", he said, " was to ascertain which buildings were founded on rock and which were not ? "] ' The Egyptian Government subsequently underpinned all the masonry of the structures not founded on rock down to the permanent water level. One can reasonably say, therefore, that at the present time, though they are submerged for a part of each year, the structures themselves are perfectly stable.

' The question is sometimes asked, What is the harm done to the sandstone of which the buildings are constructed ? Of course, as soon as any part of a building is submerged on which there are traces remaining of the paint which was there originally, the effect is to wash away the old colouring.

'The principal damage to the masonry itself, apart from that which may be caused by visitors' boats bumping up against it, is just above the high water level. When the reservoir is standing full the moisture rises in the stone until it reaches a point where it evaporates, and on that evaporation line there is an efflorescence of salt from the stone, which tends to frit away the surface as it crystallizes out.

'The source of that salt, however, is not the Nile water; it is in the stone itself, and once the stone is thoroughly washed by prolonged immersion its salt content is considerably reduced. One effect, therefore, of the complete submergence of the Temple should be to put an end to that fritting of the surface of the stone at any one level; and so far as the stone itself is concerned probably complete submergence is beneficial rather than not.

'The facilities for visiting the island have been curtailed, of course, since the first time Philae was submerged, and probably the additional submergence will not curtail these facilities very much more. Normally the reservoir begins to fill towards the end of November, and is full by the end of January. It then stands full until the water is required for irrigation in Lower Egypt in April, May, and June. After that the reservoir level is dropped and Philae is open to visitors, but by the time visitors begin to go out the water is rising again.

'But to remove the monuments and re-erect them on a neighbouring site safe from Nile waters, as has been suggested, would satisfy no one. It would be very expensive, and it would certainly not satisfy the archaeologists, for you would not get Philae as it was in its old picturesque setting, and the picturesqueness of the position was lost when the Dam was first opened a quarter of a century or so ago.

'A point that has not been referred to, but which is of some importance, is that in that part of the Nubian valley when the reservoir water level is raised some of the slopes of the valley will be submerged. On the last occasion a careful survey was made and full reports have been published, not only on the archaeology, but also on the human remains found in the various ancient cemeteries, which go back to B.C. 4000. It is very desirable that similar precautions should be taken in any further submersion of the habitable area of the valley'.

CORRIGENDA

Page 155, line 5, *for* 1650 *read* 1692

,, 157 ,, 21, ,, Sabioni ,, Sabione

Recent Events

The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.

In the March number of the *Bulletin de la Société préhistorique Française* (vol. XXVI, pp. 177–9) it is stated by Comte Bégouen and Monsieur Adrien de Mortillet that the well-known painted pebbles of Mas d'Azile are all forgeries ! When we are told that 'the workmen dug [in the cave] for months without any supervision, sending to Piette what they had found in his absence' we can believe this. Is there more to come ?

Recent excavations at Tell 'Umair, a mound on the west bank of the Tigris opposite Ctesiphon, have proved it to be the site of the long-lost city of Aksak. The mound lies a mile and a half inland from the river. An inscription has been found mentioning the name of the second king in the dynastic list (Undalulu) and stating that he was king of Aksak (*Archiv für Orientforschung*, vol. V, p. 121).

Mr L. S. Gogan, of the National Museum, Dublin, writes :—

'The Görresgesellschaft issued for the first time last year its international bibliography of Christian Art, under the capable editorship of Professor Dr Sauer, whose name will be familiar to all serious students of this subject. It is proposed to include in the volume for this year bibliographies from the English-speaking countries, and Dr Sauer has delegated the task to me of compiling a bibliography for Great Britain and Ireland. May I claim the hospitality of your columns to invite those who have contributed to the study during the years 1926–7–8, to furnish me with copies of their publications ? The 1929 *Jahrbuch* will have a very widespread circulation over two continents, and it furnishes a convenient medium for bringing the work of English-speaking students and critics of Christian Art before a large public'.

It is proposed to publish a map of the Roman Empire based on the International Map of the World (scale 1 : 1,000,000; 16 miles to an inch). The proposal was brought forward at Cambridge last year, at the International Geographical Congress, in a paper read by Mr O. G. S. Crawford. It was adopted by the General Assembly, and a special commission appointed, with Brigadier Jack, Director General of the Ordnance Survey, as President, and Mr O. G. S. Crawford as Secretary. This Commission held its first meetings at Florence, on 30 April and 1 May last. Representatives of Italy, Spain, and Great Britain attended, and the general character of the map was decided upon. The Ordnance Survey map of Great Britain was adopted as the model to be followed, so far as possible. The first sheet to be taken up (north K 33) is that on which Rome itself falls. The work was entrusted to Professor Giuseppe Lugli and Dr Thomas Ashby. The Italian portion will be printed by General Vacchelli at the Instituto Geografico Militare, of which he is the Director. General Vacchelli courteously provided the room at the Instituto at which the meeting was held, and himself made many valuable suggestions with regard to carrying out the project. It is hoped to get to work on about half a dozen other sheets as soon as the preliminary arrangements with the compilers have been concluded. Thus, when the next International Geographical Congress is held at Paris in 1931, there will be some concrete results to lay before it. Those present at the meeting of the Commission were Brigadier Jack (President), General Vacchelli, Conte Francesco Pellati, Dr Thomas Ashby, Dr Filippo de' Filippi, Professor Castro (Madrid), Professor Giuseppe Lugli and Mr O. G. S. Crawford, Secretary.

It was pointed out by the President, in his opening remarks, that the new undertaking is not intended to interfere in any way with the project of the Union Academique. 'The purposes of the two proposals are quite different. For the map proposed by the Union Academique no common scale has been laid down, but larger scales than 1 : 1,000,000 are spoken of'.

Among recent accessions to the British Museum is a Viking sword found in the Thames near Windsor.

The bronze statue dredged up recently on the north coast of Euboea is illustrated on p. 89 of *Art and Archaeology*, vol. XXVII.

A statue-menhir or dolmen-idol has been found in the region of Saint-Chaptes (Gard) and is 1.90 metres high. (*Amer. Journ. Arch.* 1929, XXXIII, 119, summarizing *Rev. Arch.* (1928) XXVIII, 145).

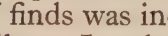
A series of volumes on the Tripolye culture is being published by the Ukrainian Academy of Sciences at Kiev. (*Amer. Journ. Arch.* 1929, XXXIII, 125).

Amongst recent acquisitions the British Museum records (in the Persia. It is
d with painted
' The style is
r to that of the
ar Ur in Iraq].
(Bronze Age)
lip ware being
decorated with rudely incised spirals and with bulb heads in relief '.

CORRIGENDUM

page 230, line 11

for Great Britain *read* Roman Britain



During January last excavations were conducted at White Hawk Camp, outside Brighton race-course, by Dr Cecil Curwen and Mr R. P. R. Williamson. The theory, put forward some years ago, that it was a Neolithic camp of the concentric Windmill Hill type was amply confirmed by the discovery both of causeways and of Neolithic pottery. There are four concentric ditches, and the plan made by Dr Curwen, based upon ' bosing ' and excavation, is full of interest. (For an explanation of ' bosing ' see ANTIQUITY, II, 258; ' ramming ' and ' sounding ' are other, less expressive, terms for the same method). A representative collection of finds was included in Dr Wheeler's recent exhibition at University College, London (see his catalogue, and an interview in the *Sussex Daily News*, 18 January).

Mr Sidney Smith has been appointed Director of Antiquities in Iraq for two years. Mr Smith is an assistant keeper in the Egyptian and Assyrian Department of the British Museum. He is the first full-time occupant of the post he is to hold.

A Roman camp has been excavated on Wall Heath, between Himley and Enville, Staffordshire, by Mr Gerald P. Mander and the boys of Wolverhampton grammar school. From the objects found it is probable that the camp belongs to the Flavian period (77–100 A.D.) and therefore was made during the Claudian Conquest of Britain. (*Birmingham Post*, 15 March).

Professor Garstang, of Liverpool University, is to excavate Jericho (*The Times*, 27 March).

Recent discoveries on the Roman site at Thatcham, beside the Bath road near Newbury, include fragments representing nearly 30 vessels of Samian ware, about half of them having potters' stamps; fragments of a fine Castor vase with a hunting scene; a flint-lined well; and traces of foundations.

Important discoveries were made recently at Athlit near Mount Carmel. The site is now being excavated by Miss Garrod and Miss Kitson Clark, working under the auspices of the British School of Archaeology in Jerusalem. (*The Times*, 5 April).

Amongst the objects found by Comte Bégouen in the cave of the Three Brothers at Montesquieu-Avantès (Ariège) is a piece of bone with an engraved drawing of a grasshopper or cricket. This is the first and ablest representation known of that insect. (*Ill. London News*, 19 January; illustration published).

An important discovery of the fossil bones of a man, associated with those of an extinct species of buffalo, was made recently in the Springbok Flats, northern Transvaal. The site is about 80 miles north of Pretoria, and the name 'Bushveld' is also applied to it. The skull is regarded by Sir Arthur Keith as 'having so many points of resemblance to the men whose remains have been found in Pleistocene deposits of Kenya Colony by Mr Leakey, that there cannot be a doubt that, if not the same people, they are very closely akin! (*The Times*,

9 February; *Nature*, 16 March, pp. 415–6, an illustrated article by Dr Robert Broom, F.R.S.; *Ill. London News*, 16 March, pp. 425-8, a fully illustrated account by Sir Arthur Keith and Dr Robert Broom, F.R.S.).

An interesting correspondence on 'The Cruiser of Antiquity' was opened in *The Times*, 25 January (p. 17) by Sir Cecil Harcourt-Smith, who suggests that when Caligula's galley is exposed to view by the draining of Lake Nemi it may be possible to learn how the shipbuilder of Roman times disposed of the oarsmen in banks above each other. Professor D'Arcy W. Thompson drew attention (30 January, p. 10) to John Howell's *Essay on the War-Galleys of the Ancients*, and his opinion that a 'bank' of oars consisted of three only, or at most of five, placed one above another in an oblique line from deck to deck, the most probable arrangement—the idea of '40 banks' one above another being an impossible position. Mr Martin Spink (1 February, p. 7) traced the development of naval design as depicted on classical coinage and Mr G. S. Laird Clowes (28 January, p. 13) and Mr Lionel James (2 February, p. 8) cited earlier references to the subject.

The results of the second season's excavations of the British Academy at the Hippodrome in Constantinople are reported in *The Times* of 21 February (p. 7). An elaborate domed building served by underground water-supply and pipes was found. Adjoining this is a large apse, and the two buildings formed part of the outlying annexes which were known as the 'Gymnasium' or 'Bath of Zeuxippos' and the 'Augustaion' or market-place. This attribution was verified by the discovery of three altar-like marble statues, one of which was inscribed with the name of Hecuba and another with that of Aeschines. Another monument was found which proved to be a triumphal arch of the time of Acadius and Honorius, situated in the Forum of Theodosius. The arch was built across the main street of Constantinople and was some 25 metres high and 43 in breadth.

Some of the results of the season's work at Ur—principally on the site of the cemetery, and the Temple of Nannar—have been communicated to *The Times* by Mr C. Leonard Woolley. His first article (26 February, p. 15) described a Royal Tomb built throughout

of unhewn limestone. It contained four chambers, which were in fact an underground house. The tomb had been robbed but in the 'death pit' were found a few silver ornaments, and a harp with a calf's head modelled in copper. On the sounding box was a panel of mosaic work similar to that on the harp found last season. Mr Woolley (16 March, p. 13) reports evidence which points to the destruction of a settlement at Ur by a disaster which could have been none other than the Flood of Sumerian history and legend. In his final account (19 March, p. 15) he gives details of the discovery of a mud-brick rampart, some 26 feet high, on the top of which was the wall proper, though in the section cleared no trace of the latter was found.

The excavations at Agrigento (formerly Girgenti) have disclosed some interesting remains attributed to the end of the 6th century B.C. A circular opening of stone blocks found (almost by accident) at the Temple of Castor and Pollux proved to be the Bothros of an altar—the sacred vent through which the faithful communicated with the Gods. Three archaic altars were found, close to the two recorded in 1927. There was much 6th and 7th century pottery and also Siculan remains, including two polished stone axes. (*The Times*, 2 March, p. 11, and *Ill. London News*, 27 April).

Excavation of the synagogue at Beth Alpha, in Galilee, are completed. An inscription in Greek has been found which gives the names of the artists who made the mosaic floor of the synagogue and another, in Aramaic, gives the date of the mosaic as in the time of Justin I (518–27). This is the first precise dating of any of the Galilean synagogues. (*The Times*, 4 March, p. 15).

An article on the further progress of the East African expedition at Elmenteita, in Kenya Colony, is contributed to *The Times*, 7 March (p. 15) by Mr. L. S. B. Leakey.

Excavations undertaken by Mr S. E. Winbolt at Saxonbury Camp have confirmed his opinion that the site was occupied by Roman-British iron-smelters. A large dump of coarse Celtic pottery associated with sites occupied from about B.C. 50 to 50 A.D. has been found. (*The Times*, 15 and 23 April).

Some Recent Articles

This list is not exhaustive but may be found convenient as a record of papers on subjects which are within the scope of ANTIQUITY. *Books are occasionally included.*

Recent work on the problem of Lake Moeris, by Miss Gertrude Caton-Thompson and Miss E. W. Gardner. *Geographical Journal*, January 1929 (vol. LXXIII), pp. 20–60 with 17 figs, map and sections.

Sir Aurel Stein's explorations in S. Baluchistan ; further note on pp. 185–6 of *Geographical Journal*, February 1929 (vol. LXXIII), recording important discoveries of early prehistoric sites, in some of which trial diggings were made.

Sir Aurel Stein's *Innermost Asia*, has been published (1929), 4 vols., £26 5*s*. These volumes are in every way commensurate with the importance of the discoveries they record, and they are published, of course, by the Oxford University Press. What more need be said in praise of them ?

Topographical List of Roman remains found in Wales, by V. E. Nash-Williams. *Bulletin of the Board of Celtic Studies*, December 1928 (vol. IV), pp. 246–71.

This most valuable and scholarly bibliographical list covers the counties of Brecknockshire, Cardiganshire, Carmarthenshire, Glamorgan, Monmouthshire, Pembrokeshire and Radnorshire ; it is to be hoped that the northern counties will be done next, to complete the undertaking.

Ancient Ithaca, by William Dörpfeld. *Art and Archaeology*, February 1929 (vol. XXVII), pp. 51–57.

A well-illustrated article by the well-known author, who still believes that Ithaca is Leukas.

The Ancient Ruins of Rhodesia, by E. N. Fallaize. *Discovery*, February 1929, pp. 45–48.

A popular account of Zimbabwe and other similar ruins, illustrated by Mr Miles Burkitt's photographs (see also ANTIQUITY, III, 99).

On certain terrace-formations in the South of Scotland, and on the English side of the Border, by R. Eckford, of H.M. Geological Surrey. *Procs. Soc. Antiquaries of Scotland* (1927–8), LXII, 107–20, 4 figs.

An interesting paper with a valuable list of fifteen places in the counties of Lanark, Peebles, Midlothian, Roxburgh, Berwick and Northumberland where such terraces occur. A good deal of space is given to proving that they are artificial—a point we thought universally agreed upon nowadays. The writer refers to Dr Curwen's paper in ANTIQUITY (I, 261–89), but he does not seem to be familiar with the authorities quoted there.

The Antiquities of the St. Kilda group of islands, by John Mathieson. Ib. id. pp. 123–32, 15 figs.

Notes on Scottish bronze rapiers [and other matters], by J. M. Corrie. Ib. id. pp. 138–52, figs.

A Roman bronze patera from Berwickshire, with notes on similar finds in Scotland, by R. C. Bosanquet. Ib. id. pp. 246–54.

A synthetic study of the subject which will be found invaluable for future reference.

A La Tène shield from Moel Hiraddug, Flintshire, by W. J. Hemp. *Archaeologia Cambrensis* (1928), LXXXIII, 253–84, 17 figs.

This is not only an account of an interesting relic whose true character was spotted by the author, but is a synthetic account of the shields of the same type found elsewhere. It is abundantly and excellently illustrated, and contains a bibliographical list of 12 other examples found in Britain.

The Ancient inscriptions of Wales, by R. A. S. Macalister. Ib. id. pp. 285–315.

An excellent and clearly written account by one of the greatest living authorities.

Landscape and history in mid-Glamorgan, by H. J. Randall. [Presidential address, delivered to the Cambrian Arch. Assoc., at Aberafan, 16 August 1928]. Ib. id. pp. 316–29.

This is one of those truly geographical studies which, in the welter of rubbish, we find so welcome.

Recent excavations, by W. M. C[alder]. *Journal of the Manchester Egyptian and Oriental Society*, 1929, no. 14, pp. 19–25.

A useful critical account of recent work in the Middle East, written from an independent standpoint. Professor Calder questions the age assigned by Mr Woolley to the Royal Tombs of Ur, citing the parallelism between the cylindrical calcite vases and those of Egypt. He does not however deny the 'fairly obvious greater antiquity of Mesopotamia'. This line of enquiry is to be dealt with fully by Dr Reisner in a forthcoming number of ANTIQUITY.

Pre-Assyrian Assyria, by E. A. Speiser (Univ. of Pennsylvania), *Annual of the American Schools of Oriental Research*, vol. VIII.

Towns of Ancient Georgia, by W. E. D. Allen. Part I. Colchis or Western Georgia. *Asiatic Review*, January 1929, pp. 57–64.

The Excavation of Roman Britain, by R. E. M. Wheeler. *Discovery*, March 1929, pp. 91–95.

On the need of co-ordination and restraint in excavation. Dr Wheeler independently advocates the same policy as that outlined in our last Editorial Notes, which by a curious coincidence appeared on the same day.

Un gisement mésolithique en Brétagne, by Marthe et Saint Just Péquart. *L'Anthropologie* (1928), XXXVIII, 479–93.

Contribution à l'étude des mégaliths Abyssins (suite), by H. Neuville. *L'Anthropologie* (1928), XXXVIII, 523–64.

The second and final instalment of a valuable study. The first appeared on pp. 255–88 of the same volume.

Le paléolithique de la Chine, by M. Boule, H. Breuil and P. Teilhard. *Archives de l'Institut de Paléontologie humaine*, mémoire 4. Paris: Masson. pp. VIII, 138, 53 figs, 30 plates. 160 francs. [Reviewed in *L'Anthropologie*, XXXVIII, 573–8].

Découvertes archéologiques en Arménie de 1924 à 1927, by H. Berbérian. *Revue des Études arméniennes*, (1927), II, 267–96. [Summary in *L'Anthropologie*, XXXVIII, 587–89].

Les Civilisations anciennes de l'Asie Mineure, by Félix Sartiaux. Paris: Rieder, 1928. pp. 80, 60 plates.

L'Empire socialiste des Inka, by Louis Baudin. Paris: Institut d'Ethnologie, 1928. pp. IX, 294, 3 maps.

The Bronze Age in South Africa, by Prof. Raymond A. Dart, University of the Witwatersrand. *Nature*, 30 March 1929, pp. 495–96.

The Origins of Road Transport, 3500–500 B.C. by Hugh P. Vowles. *Roads and road-construction* (1929) VII, 85–7, 132–3.

A useful popular summary, concerned mainly with the Middle East.

Les Hyksos sont-ils les inventeurs de l'alphabet? by Charles F. Jean. *Syria* (1928), IX, 278–99.

Les Egyptiens à Beyrouth, by Maurice Dunand. Ib. id. pp. 300–2.

Feuilles de l'École archéologique française de Jérusalem, effectuées à Naplouse, du 12 Septembre au 6 Novembre, 1927, by Fathers Abel and Barrois. Ib. id. pp. 305–19.

Les étapes d'une campagne dans les deux 'Irak, d'après un manuscrit turc du XVI siècle, by Albert Gabriel. Ib. id. pp. 328–49.

Reproductions of oblique view-plans of Sumbeul, Galata, Tebriz, Sultanieh, Baghdad, Hillah, Dorgouin, Alep, Harmidieh, Amida.

Les céramiques musulmanes de Suse au Musée du Louvre, by Raymond Koechlin. *Mem. de la Mission arch. en Perse* (1928), XIX, pp. 1–170, 23 plates. Paris: Leroux.

La préhistoire orientale, by Jacques de Morgan, 3 vols. 1925–7. Paris: Geuthner, 1927. 300 francs.

Recent Excavations in Italy, by Dr Thomas Ashby. 1. In and near Rome. II. The South, Sicily, and Albania. *Times Literary Supplement*, 5 April 1928, p. 255; 12 April, p. 293.

Dr Ashby's annual review is as full of information as ever and he records work and discoveries relating to the Fora of Augustus and Trajan; temples near the church of San Nicola in Carcere; the mausoleum of Augustus; the Emperor Aurelian's walls [271–5 A.D.]; the tomb of the Nasonii; caves on the Montagna di Cetona; finds of coins near Civitavecchia; Hadrian's villa near Tivoli; the Temple of Fortuna at Praeneste; the Via Domitiana between Literno and Cumae; Pozzuoli [the ancient Puteoli]; an underground sanctuary at Agrigentum [5th cent. B.C.]; and excavations in Albania on the Acropolis of Finiki and the Acropolis of Buthrotum (Butrinto)—on both sites prehistoric remains were found.

Some beautiful photographs of ancient causeways in the Pennines are published in *Country Life*, 16 March, illustrating an article by Mr W. B. Crump.

The Illustrated London News continues to give particular attention to archaeological discoveries and we hope in the next number of ANTIQUITY to give a list of the most important illustrations and articles published this year.

Reviews

ROYAL COMMISSION ON HISTORICAL MONUMENTS (ENGLAND). An Inventory of the Historical Monuments in London. Vol. III. Roman London. *H.M. Stationery Office.* 1928. *pp.* xxi, 207. 18*s.*

The Royal Commission on Historical Monuments (England) deserves well of the increasing numbers of Englishmen keenly and intelligently interested in the past of the country. There is no inconsiderable body of archaeologists who look forward to the appearance of a new volume of the series with an enthusiasm equal to, if more disciplined than, that which greeted—as we are told—the serial numbers of *Pickwick* in their due succession. The first volume published by the Commission—Hertfordshire, in 1911—was admittedly experimental; its faults were corrected, its omissions made good, in the subsequent county publications, and the successive volumes have maintained an astonishingly high standard. So monumental, so complete, so accurate, so packed with interest are these volumes that in the pigeon holes of one's mind one places those fortunate counties whose treasures have been enumerated in a class apart; one conceives of England as (in this field) comparatively unknown in darkness, with the sun of systematic knowledge illuminating London and the Home Counties—Essex, Herts, Bucks, and Huntingdonshire. A shaft striking through the clouds will light a corner of the west—Herefordshire, wherein much of exceptional interest will be apparent.

Progress is slow, Treasury grants are all too small; at the rate we are now proceeding it may be 40 years before England is completely surveyed. Meanwhile fire, ignorance and folly, the march of industrial development, the indifference or cupidity of owners and the demand for panelling and fireplaces of the 16th and later centuries are making serious inroads into our heritage of beautiful buildings and structures of historical interest. The selection of Huntingdonshire as a county to be proceeded with at an early date was, we believe, due to the munificence of an individual who supplemented the Treasury grant available for a given period. We can imagine no way in which a wealthy man could erect a more lasting monument to his acumen and public spirit than by enabling his particular county to secure this record before it is too late.

The Commission has published most interesting volumes on London (West London and Westminster Abbey); in the present publication it has broken new ground by devoting a volume to Roman London, in which is included not only structures still extant but those which are on record and have been since destroyed. Whether with so much that is destroyable all over England still to record the Commission with their too-limited grants from the Treasury were wise to pause in their progress to record that which has already been destroyed, is questionable; it is at least certain that the work was amply worth doing, that it could hardly have been done so well, or on such a scale, save with the organized resources and prestige of a Royal Commission. We must therefore be grateful for the decision.

'Roman London' then contains a complete inventory of all extant remains and memorials of the Roman city, and records also discoveries covered up, destroyed or lost as soon as made.

This inventory, arranged logically under defences, structures within, and structures outside the walls, and burials, is adequately illustrated with 68 plates, 7 plans and 93 text-figures. It forms the basis of, and provides the material for, a study of the problem of London—its origin and early history—which to the majority of readers will be the most interesting part of the book. It is from the pen of Dr R. E. M. Wheeler, Keeper of the London Museum, whose summary of the history of Segontium and the Roman fort at Brecon, in successive volumes of the Transactions of the Honourable Society of Cymmrodorion, will have prepared the reader for a brilliant and sustained piece of historical reconstruction. No apology is offered for devoting the greater part of this brief review to his survey : for ANTIQUITY is concerned with the results of research, and with the synthesis of observed facts, rather than with the collection of data.

Reasoned attempts to reconstruct history in the times before written documents, by means of archaeological material, have been of late years marked by a growing appreciation of the importance of the geographical and geological setting of the area studied. It has been increasingly realized that no successful attempt to reconstruct the past in Britain can be made unless the natural advantages or disadvantages afforded by the environment are examined, and the achievement considered in relation thereto.

Dr Wheeler has shown in his text and in the illuminating map which accompanies it (plan c) that the natural conditions to a large extent explain the early history of London. This map indicates by means of suitable symbols the distribution of alluvium, clay land, gravel, and chalk. We have ample evidence for equating clay land with dense forest, gravel with scrub and occasional high timber, and chalk with downland. This beautiful example of archaeological cartography, then, recovers for us a picture of the lower Thames as it was before 43 A.D. Ample evidence is presented in this book to justify the conclusions that London came into being either at the time of the Claudian invasion, or so close to that occasion as to be justly described as of Roman origin. Since she so rapidly climbed into a position of commercial dominance, the failure of the civilized Celtic people of eastern Britain to utilize her site seems remarkable. The map yields the reason. It was due, unquestionably, to the limited hinterland of open country which lay on the north [left] bank of the Thames. Great belts of forest, ten to fifteen miles broad, lay on the north-west side, while on the north and north-east this forest country extended, one might say, indefinitely. Any large settlement in pre- or protohistoric times was under a disadvantage if it did not possess a broad hinterland of open country for the production of corn and the maintenance of flocks and herds.

The contrast between the extent of occupation in prehistoric times of the banks of two rivers very near to each other in the Cambridge region, the Ouse and the Cam, affords proof of this thesis. The gravel banks bordering the Ouse were flanked by dense forest, those bordering the Cam by open chalk downland. The former in every prehistoric period yields scanty evidence, the latter abundant evidence, of occupation. In the case of the lower Thames valley, it is clear that directly a civilization appeared capable of making hard roads for rapid transport across the claylands bordering the river, into the hinterland, the selection of the site of London as a settlement, and its development as an important town, was assured.

London then came into being about 43 A.D., and an interesting regional analysis points to its having been concentrated primarily on the eastern of the two hills adjacent to London Bridge, that whereon Leadenhall Market is situated. The city, before 60 A.D., petered out as it approached the hill on which St. Paul's now stands. It is possible that traces of the handiwork of Boudicca, who brought fire and sword to its

inhabitants and buildings in that year, have been seen in King William Street and elsewhere ; evidences of burning which can be with fair certainty dated to this decade occur. One of the most interesting deductions from the Commission's survey (see *Inventory*, pp. 69–82) is that the town wall of London was erected within half a century of the Boudiccan revolt. It enclosed an area of about 330 acres, an area only exceeded in Britain, Gaul and Germany by four cities : Nîmes and Autun, Avenches and Trier. ' Save for the suburb in Southwark Roman London was comfortably contained by its defences ; it clung, as it clung for the most part throughout the middle ages, to the river frontage where its shipping lay '. The most important structure within the walls was the *Basilica*—' a great aisled hall with an eastern apse and a total length of at least 350 and probably 420 feet '—the largest basilica in Britain.

A mass of legend and loose comment is swept away by the brief statement that the religions of the city are represented by ' no recognisable shrine or temple '. Indeed, ' apart from the structures already mentioned and a few dedicatory inscriptions, only one definite monumental relic of the public life of Roman London remains to us '—the famous bronze head from a colossal statue of the Emperor Hadrian, found in 1834 in the Thames near London Bridge. This may well commemorate the Emperor's visit to Britain in 122 A.D.

Dr Wheeler thinks very little of the general aspect of London architecture, the monumental details which have been preserved showing for the most part the ' dull heavy work of local craftsmen ' ; certain works of art, however, such as the well-known ' Archer ' found in Queen street, illustrate the fact that overseas trade was the basis of London's prosperity.

No evidence as to the exact position of London Bridge in Roman times is available, but the incidence of chance finds fixes its position within close limits : it must have been very near ' old London Bridge ', founded in the 12th century.

The Roman road system within and without the walls is analysed, and a finely wrought contoured map, by Mr Duncan Montgomerie, shows the traffic lines which radiated from the city. Their relation to the main features of the countryside is most interesting, and has never before been so clearly shown.

An interesting discussion of the position of Roman London in respect to provincial administration yields the following conclusions—' A general survey of the whole period of the occupation thus yields the following results. From 43 to 60 the position of Colchester as formal capital of the partially-conquered province remained unchallenged. After the failure of Colchester in 60, the natural advantages and growing wealth of London gave her increasing prestige, and, though she was apparently without rank, the financial administration seems to have been quartered there, the headquarters of the provincial emperor-cult may have been transferred thither from Colchester, and inferentially the Council of the Province may have held its periodical meetings there. Her commercial origin (in which she resembled the great Gallic capital) and the fact that she was neither a municipality nor a " civitas ", suggest a certain detachment from local territorial commitments which may have helped rather than hindered her provincial advancement. The subdivision of the province, first by Septimius Severus and later by Diocletian, may have impaired her formal responsibility in minor provincial administration, but it is clear that in the 4th century, though she shared with military York some of the responsibilities of leadership, she was recognized as the main nerve-centre of the province. Two centuries later, she still remained to the Roman mind the premier British city '.

With reference to the vexed question of the survival in the 5th century of Roman

London, Dr Wheeler holds that the city existed as the home of an organized community in 429 and possibly until after St. German's second visit in 447. He makes the interesting and to my mind very probable suggestion, that a belt of Saxon invaders in the south-east counties were snugly settled, tilling their fields, very early in the 5th century. These fellows, who wanted peace and quiet, may have quite incidentally protected certain surviving Roman cities—among them London—from the destructive raids of Picts and Scots. He pictures Saxon immigrants rowing up the Thames past the walls of London to occupy the desolated and deserted countryside of the upper Thames. London survived because it was, in the new order, unimportant ; it mattered little now that its trade had vanished, save to the inhabitants themselves, largely decivilized by isolation.

This imperfect appreciation of a remarkable volume must include a reference to the interesting appendices on inscriptions, terra sigillata, coinage, etc. by scholars such as Mr R. G. Collingwood, Dr T. Davies Pryce, and Mr G. F. Hill who have made these studies their special field ; and to the admirable work of Mr A. W. Clapham, and other members of the staff, on the Inventory.*

Finally we may refer to the lament, explicit and implicit in the volume, that the destruction of Roman remains in London by deep excavation for modern building is proceeding faster then the building up of constructive record by exact observation. We can never know all we wish to know of Roman London, but much, essential to our understanding of its history, is daily being destroyed. If funds were available it would be possible to maintain a close watch on deep excavations ; the stratification of the Roman city thus exposed could be fully recorded, and the objects scattered through the Roman levels preserved. Work on these lines is being done today, but under great and increasing difficulty. The merchants of so wealthy a city could well spare an annual sum sufficient to secure the preservation of the relics of its early history as from time to time they are exhumed.

CYRIL FOX.

THE BADARIAN CIVILIZATION AND THE PREDYNASTIC REMAINS NEAR BADARI. *By* GUY BRUNTON *and* GERTRUDE CATON-THOMPSON. [*British School of Archaeology in Egypt ; Bernard Quaritch, London*, 1928. 50*s*.] *pp*. 138 *and* 85 *plates*.

QAU AND BADARI, I. *By* GUY BRUNTON, *with chapters by* ALAN GARDINER *and* FLINDERS PETRIE. [*The same*, 25*s*.] *pp*. 90 *and* 49 *plates*.

QAU AND BADARI, II. *By* GUY BRUNTON. [*The same*, 25*s*.] *pp*. 32 *and* 104 *plates*.

The first volume is in some ways the more interesting as it contains the greater part of the new material collected in 1922–3, 1923–4, and 1924–5. Mr Brunton devotes the first 42 pages of part I to an extremely clear description of the Badarian sites, villages and graves (chaps. II and III), the graves and burials (chap. IV), the Badarian pottery (chap. V), and the various other objects including flints (chaps. VI–IX). The illustrations are on plates IX–XXIX. Five pages give a summary of the period. Chapters XI–XX deal in a similar way with the predynastic villages and cemeteries, illustrated by plates XXIX–LXI. In part II Miss Caton-Thompson describes most completely and scientifically

* In the list of periodicals, on p. XV, we notice ANTIQUITY, but though always pleased to see our Review referred to as a source we must point out that in this instance THE ANTIQUARY is intended. Papers in the latter are referred to in several places in the Inventory by the abbreviation *Antiq*.—EDITOR.

the Badarian and predynastic site for the excavation of which she was personally responsible. (Plates LXII–LXXXV).

The first thing that strikes the reader is the complete and conscientious way in which the work has been carried out down to its smallest details. It is clear that the excavators were on the spot with the workmen most of the time, an absolutely essential condition if accurate results are to be secured. The writers have presented the discoveries in an orderly way, using the facts to support their deductions while at the same time giving the reader an opportunity of making comparisons and of checking the conclusions from the material itself. The compression of the predynastic cemeteries into tabular form with innumerable references to plates or to a corpus of forms (plates XXX–XXXIII) involves, however, a great sacrifice of the time of the reader who desires a visual reconstruction of the material. Small scale sketches of the graves with their contents drawn in outline and arranged in horizontal lines would perhaps have been better.

In the presentation of the Badarian material no such criticism can be made. It is very fully and clearly given. Turning over the pages of plates one is delighted with the admirable drawing and arrangement of the flints by Miss Caton-Thompson. Flints do not always come out well in photography, as a glance at the plates in this volume will prove. Photography, unless of the best, is often unsatisfactory. For example in plate LXVIII, 2 and 4, the use of a focussing instrument or better focussing would have given a clearer picture. But these are small blemishes.

It is perhaps unfortunate that the French habit of giving the name of a locality to an ancient culture has been adopted. Amratian, Gerzean and Semainian are somewhat obscure ways of expressing the early, middle and late predynastic periods. What the Badarian would have had to be named if the neighbouring village had been called Sheikh Mohammed is an interesting speculation. What really is the Badarian culture or (as the authors call it) civilization? No very remote antiquity as was at first suggested can be proved for it, as copper was already in use and was plentiful enough to be buried in the graves of a somewhat poor community. The first impression is that of a *degenerate* predynastic culture rather like that found in Nubia. In the Nubian graves of the early dynastic period there is the same black topped or black mouthed pottery, the forms of which are practically indistinguishable from the drawings of the Badarian pottery, while the mending of cracked pots is identical. Differences in the quality of the local clays would explain the slight differences in technique on which perhaps too much stress has been laid. At one stage the Nubian pots may have been, and indeed often were, 'rippled', but it seems to have been regarded as a sign of rough workmanship and the ripple marks were rubbed down to a smoother surface. It is certainly often visible enough though never to the extent shown in the Badarian Pottery. In the middle kingdom Nubian (late) it reappears as an ornament on small red painted and polished bowls together with an *artificial* black mouth or brim.

It is perhaps premature, without further evidence, to consider the Badarian as earlier than the early predynastic. The discoverers themselves admit the finding of four predynastic pots in Badarian graves but are quite certain that no Badarian pots occurred in the predynastic graves. A few details (p. 39) even suggest a later date, and copper was in use. Is it not possible that the Badarian culture is that of a people living along the desert edge by hunting and cattle-keeping, still practising the predynastic arts in a debased form and failing like the Nubian communities to keep pace with the rapidly developing dynastic civilization of the wealthier or more aristocratic communities? We may even see in the Badarian such a survival of a more primitive culture as were the

pangraves (Nubian) which occur later in Egypt. A modern parallel is afforded by the Ababdel Bisharin or even the Beduin living their unchanged life alongside the more highly cultured fellahin.

The presence of predynastic pottery in a settlement *above* a later culture might be explained by raids for pottery from an early cemetery by a people who were degenerating or who experienced an occasional shortage of pottery of their own making. Mr Brunton has himself seen a predynastic pot *in position* with Ptolemaic pottery (*Qau and Badari*, I, p. 6), while Miss Caton-Thompson speaks of the difficulty and uncertainty (over which she has certainly triumphed) of excavating a settlement where many factors obscure to ourselves may interfere with the stratification. The general fact that in the lower levels she found only a core flint industry is clear, but it is curious that a lower type of flint working should be associated with what she considers to be a very high ceramic technique. It seems strange that some of the typically Badarian objects such as beads, bone needles, and state palettes are conspicuous by their absence in these lower strata.

In Nubia settlements are rare owing to their situation under the modern houses or to their burial under high terrace cultivation irrigated by waterwheels. In many places what at first looked like settlements turned out to be patches of cucumber or gourd cultivation, a shallow layer of earth and potsherds from the nearest archaic cemetery dug in high ancient alluvium being spread abroad very often above much later remains.

The blacked topped and black mouthed wares seem to be typical of the primitive upper Egyptian tribes, or of a section of them, who retreated before the settled agricultural communities. The finest black polished and red polished black topped pottery is that of the beakers found occasionally in lower Nubia, but in great abundance by Dr G. A. Reisner in the Sudanese tombs of Prince Hepzefa of the twelfth dynasty and in the surrounding tumuli.

In the two volumes Qau and Badari I and II, the early dynastic cemeteries are dealt with. The outstanding feature is the admirable and expressive drawing by Mr Brunton of the seals, scarabs, and amulets (to say nothing of the stone vessels and pottery), so far more effective than the photographic illustration of the same objects. The lists of forms of amulets and beads are of the greatest value and interest. The tombs and bead registers again suffer from too great compression, but the reader will welcome the numerous drawn tomb-groups on plates XLIII to XLVIII, although these might have been inserted in the text describing them. Some of the photographs, for example pl. XXXV, taken in full sunlight against a black background, which merges with the shadow side of the objects, are not very good, orthochromatic plates with a yellow filter would allow of red carnelian and blue faience being photographed together. A horizontal piece of plain glass supporting the objects with a light card at 45° below it avoids all cast shadows.

As a counsel of perfection, from the reader's point of view, references *from the plates* to the text are of the greatest value. It is often the plates which the reader, especially the foreign reader, looks at first, although from the authors' point of view they only illustrate the text. In general a *graphic* or even diagrammatic representation of associated archaeological material is of far greater value than pages of unillustrated text crammed with numerous references to the plates or corpus, and it will be found in practice that the extra time taken over the drawings is very little more than that taken in transcribing a verbal description from a notebook. The method of presenting evidence in compressed tabular form consisting largely of numerals, references and abbreviations, while a guarantee of archaeological good faith, is severe on the reader if his examination of the evidence is to be as thorough as that of the recorder, or if he desires a *visual* impression.

But these are but small defects and are of little importance when set against the archaeological skill and sincerity which these volumes exhibit. Too little is known of the humbler civilization of the Old Kingdom and of the obscure period which followed it. Mr Brunton, Miss Caton-Thompson and their colleagues have done very much to illuminate and illustrate some of the darker places of early Egyptian history and prehistory.

C. M. FIRTH.

THE ART OF THE CAVE DWELLER: a study of the earliest Artistic Activities of Man. *By* G. BALDWIN BROWN. *John Murray*. 1928. *pp.* xix, 280. 18*s*.

The Professor of Fine Art in the University of Edinburgh has made an important contribution to our study of the pictorial art of palaeolithic man. Having undertaken a course of lectures in connexion with the Munro foundation, he proceeded to examine personally all the more noteworthy examples of the handiwork of the palaeolithic cave-dweller which had already been discovered in France and Spain. In this examination he had the advantage of discussing the drawings and sculptures with most of the discoverers and he skilfully recorded his impressions in a large number of photographs. In this beautiful volume he has now collected the essential facts, illustrated not only by drawings but also by many of the photographs just mentioned, and he discusses the whole subject from the point of view of an artist. It is a most readable and inspiring work, and will be welcomed by all who have followed recent developments in the research with which it deals.

Professor Baldwin Brown emphasizes the fact that every artistic activity and every form of artistic production is preceded by similar activities and similar forms of production which are not artistic. The primitive hunter must naturally have become a keen observer, and learned to distinguish his game in an obscuring landscape of objects sometimes more or less resembling it. When he returned to his cave shelter, he would still be haunted by the idea of false appearances, and would be struck by any fanciful resemblance of a piece of rock or markings to the animals with which he was familiar. He would be tempted to improve these natural or accidental features with touches which would indicate an eye or mouth or other detail that seemed lacking. Thus would begin representative art, and then there would be an inclination ' to try something fresh of the same kind, the stencilling of the open hand having perhaps already given the idea of making a picture '. Art did not result from the idle dallyings of the women and weaklings who stayed at home, but originated with the hunter himself. Thus arose its secondary purpose of magic, which Professor Baldwin Brown agrees with other observers in recognizing everywhere in the dark recesses of the caves. When the hunter had completed the resemblance to the object that he had in mind, he ' brought the real thing into being and located it there '. If he dealt with the representation suitably, his next hunt would be a success. Having acquired this belief, he was compelled to do his best and achieve the artistic results which it would be difficult to improve in the circumstances under which they were produced.

As to the place of the origin of cave-art, Professor Baldwin Brown remarks that if the La Grèze bison is one of the earliest examples in western Europe—as seems clear—the primitive hunter must probably have had long artistic experience before he reached this part of the world. He agrees with the Abbé Breuil, however, that his progress towards perfection here was remarkably rapid. The La Grèze bison, of the early Aurignacian period, is distinctly primitive, with a crude drawing of the horns, and the

legs of only one side with no attempt to add the feet. The later Magdalenian drawings are not only well finished, with some perspective, but mark the beginning of real artistic composition. Professor Baldwin Brown points out that stoutness is indicated in the drawing of a woolly rhinoceros in the cave of Font de Gaume by shading similar to that adopted by Rembrandt in one of his famous drawings of an elephant. He notes that in the familiar sketch of a mammoth on a piece of ivory found by Lartet and Christy years ago in the cave of La Madeleine the hunter had already learned, without any detriment, to accommodate his design to the space which was to contain it. He also collects a few instances both of animals and man being drawn in direct relation to each other to form a pictorial grouping. The palaeolithic hunter is shown, indeed, to have reached a high place in art, and it is remarkable that, however much this art was subordinated to the purpose of magic, it never became formal nor could it be described as ' hieratic '.

A. SMITH WOODWARD.

THE ROMAN POTTERY AT CRAMBECK, CASTLE HOWARD. *By* PHILIP CORDER. Roman Malton and district. Report no. 1. *Published by the Roman Antiquities Committee of the Yorkshire Archaeological Society. York: the Ebor Press.* 5*s*.

This report is the first of a series that it is proposed to issue on excavations at the Malton Fort and other sites in the vicinity. It has been carefully prepared and is well illustrated with photographs, plans and sections of the kilns, etc., and there are eight plates of 208 excellent drawings of pottery.

The excavations were carried out in 1926–7. They were mostly concerned with the examination of several kilns in the neighbourhood of Castle Howard on a site that has long been known to contain Roman remains and where kilns, burials, coins and much pottery have from time to time been encountered. The actual digging, etc., on the present occasion was done by Mr Corder and boys from Bootham School, in many ways an excellent arrangement as the number of people qualified to undertake work of this description is sadly limited, and it is to be hoped that this training of the younger generation will result in producing some good archaeologists who in the future will be able to supervise excavations in a scientific manner.

Upon glancing through the plates of this report it would be obvious to anyone conversant with the dating of Roman pottery that the bulk of the finds belong to the latter part of the occupation. Our knowledge is, however, insufficient to enable us to estimate with any certainty the date of introduction or the duration of the various types of this period. The dating of the earlier Roman pottery is more precise, and this can be largely accounted for by the small number of late 3rd and 4th century sites excavated that can be accurately dated ; also by the fact that at places where the occupation lasted for the greater part of the Roman occupation the later levels being near the modern surface have as a rule been much disturbed, making certain stratification impossible. Many types common in the 3rd century continued in use well into, if not right through, the 4th century and as these are often the ones found in greatest profusion, such as the flanged bowls and dishes and certain of the mortaria, close dating at this period by pottery alone is an exceedingly difficult matter.

It is from a site such as the one at Crambeck, where it would appear that there are many kilns awaiting examination, that much knowledge may be derived. That any individual kiln was in use for a long period is improbable and it should therefore be

possible after a number have been examined to place the pottery associated with each in chronological order. If this could be done and some of the kilns dated by coins or other means it would be a most valuable piece of work and one that would be welcomed by all excavators of Roman remains in this country. Up to the present no coins have been found associated with the pottery but as the small copper coinage was very prevalent in the late 3rd and 4th centuries some may be confidently expected in the future.

There appears to be little doubt that these kilns were for baking pottery but it is curious that there is practically no mention of wasters, such as vessels cracked or distorted or fused together. Several of the fragments are said to be overbaked or burnt but either of these effects can be produced by a burning in an ordinary fire after removal from the kiln. That this actually happened in one instance at Crambeck is illustrated by the fact that one portion of pot no. 27, although badly overbaked, joined on to another piece that was normal. The explanation for some of these burnt pieces may be the not unusual practice of making the dome of a kiln of clay or mud and reinforcing it with potsherds which, subjected to intense heat, often have the appearance of wasters. There seems to be a vast amount of broken pottery spread over the site, more than would be expected from the occasional breaking of pots during or shortly after their removal from the kilns, and it would be interesting to know if these show signs of wear and to have the views of the excavators on this question.

The remark made in the report that ' on a site where pottery is so plentiful the burial pots are of little value as evidence ' is curious, as the burials are obviously later than the kilns and if their period were known a date after which the kilns could not have been in use would be ascertained. In any case it is hoped that more work will be done upon the cemetery, which up to now has produced only two pots both distinctive in character but difficult to date.

At the beginning of an excavation of this description problems are always encountered that cannot be satisfactorily solved, and although the tentative suggestions made in this admirable report may prove to be accurate much more work will have to be undertaken before definite conclusions can be arrived at. The excavators express difficulty in accounting for the coin of Nerva and the 2nd century Samian discovered but the burials clearly indicate that there was also an occupation later than the kilns. We have therefore evidence of occupation in the 2nd, probably in the 3rd and certainly in the 4th, centuries, but as no actual dwellings have as yet been discovered it would seem that a settlement must exist near at hand and that the area now being examined lay without its confines and was used for different purposes at various periods. An examination of the interior of the earthwork shown on the plan in the report might throw some useful light on the history of the site.

J. P. Bushe-Fox.

BRONZEZEIT AM JENISSEI. *By* G. von Merhart. *Vienna: Anton Schroll & Co.* 1926. *pp.* 189, *illus.* 12*s*, *in cloth* 17*s*.

The author, who is a professor in the University of Marburg, describes, in the preface, how this book came to be written. During his Siberian war-captivity of six years Merhart served as assistant in the museum of Krasnojarsk, where he had the opportunity of becoming acquainted with the prehistoric material of Siberia, and of collecting, at least in part, the material for the present work. When the war was over, Merhart voluntarily remained in Siberia for another six months, in spite of severe privations, in order to complete his studies.

In past years several writers have dealt with the Bronze Age in Siberia, but it may safely be said that no one has acquired such exact knowledge of the material as this new writer, whose deductions are therefore of the greatest importance. Earlier students had regarded the Siberian and Uralian Bronze Ages as being uniform and called this one culture the Ural-Altaic Bronze Age. But even authorities such as Aspelin, Worsaae, Montelius, Sophus Müller and Reinecke differed as to whether the culture came from east or west, and as to its origin. Tallgren was the first to see that the Siberian-Uralian territory was not uniform ; and he has established the fact that each district was a separate cultural province.

The history and present position of the subject is given in Merhart's first chapter. In the next he gives us a geographical sketch of the region. When we speak of the Siberian Bronze Age, we usually mean the Bronze Age on the upper Jenissei, because only in this district have the bronzes been at all well studied. This is largely the result of the geographical position of the region, which is bounded by chains of hills, by the lake of Teiga, and by the primeval Siberian forest. Strictly there are two districts, a southern larger one, called the basin of Minussinsk, and a northern smaller one, the steppe of Krasnojarsk and Kausk, which is separated from the southern district by a chain of hills. Even today only a few roads lead into it from west and south, and in antiquity the roads were certainly not more numerous ; so that the isolation of the culture is sufficiently explained.

For establishing the succession of Bronze Age cultures on the Jenissei, the contents of graves are utilized as much as possible (chapter 3). As the oldest known tombs belonging to the full Bronze Age, the kurgans are described in detail. They are called literally ' cornerstone kurgans ' (Ecksteinkurgane), and consist of artificial mounds or barrows, surrounded by a rectangular wall of stone slabs. The skeletons lie in graves whose sides are lined with wooden planks or flat stones. In each kurgan there are several graves and each grave usually contains from two to four skeletons. Connected with this group are the kurgans with collective burials. This type is regarded as next in succession to the first group. The mounds are bigger and the burial chambers contain a larger number of skeletons, sometimes as many as two hundred. After the tombs were filled, the wooden superstructure was set on fire, and the mound was piled on top. Great kurgans of this kind occur also in the district of Krasnojarsk, so that we may infer a northward immigration from the basin of Minussinsk. Small model-objects are typical of the grave-goods, and iron is very rare. A second group of later kurgans with collective burials is confined to the full Bronze Age. Masks of clay or plaster are frequently found in these tombs. Cremation appears, though rarely, and both kinds of burial custom are found side by side, until for some reason these collective tombs, which last well into the Iron Age, disappear.

The geographical isolation of the upper Jenissei district coincides, in the full Bronze Age, with a cultural isolation. The Krasnojarsk region has a culture of its own, quite distinct from the culture of the Minussinsk basin. Almost confined to the northerly part of the Jenissei province are socketed axes with geometrical ornament (chapter 4), curved two-edged daggers, and some isolated knives (chapter 8). With the appearance of collective burials in the Krasnojarsk district, the culture previously found there disappears.

Merhart gave special attention to the relations with east Russia, but to clear the ground he had first to study the distribution of Russian Bronze Age axe-types. The result shows that the elements of culture migrated not from east to west, but from west

to east till they reached the Jenissei district. The Ural district is important as lying on the route from east Russia to Siberia (chapter 7), but it does not form a separate culture-province, being an outlier of east Russia.

While the culture-province of Krasnojarsk looks westward, that of Minussinsk looks to the south and south-west, but Scythian south Russia did not influence the Minussinsk Bronze Age, as has often been supposed. The differences are greater than the resemblances. This is proved by a comparative study of the daggers and by the style of the animal-designs of the two districts (chapter 9). The bronzes and animal-designs of the Minussinsk region may be divided into two groups. The older group, in contrast to the Scythian, shows only a few animal motives. But with the advent of the collective burials, brought in apparently by an immigration from the south, there is a sudden increase in the number of types, many of which appear to be copied from iron models, though they continue to be made of bronze in Minussinsk. Characteristic new types are the griffen-head decorative motive and gold plates of west-Siberian style. This immigration from the south apparently caused part of the original kurgan-builders to wander northward into the Krasnojarsk district (chapter 12).

The gold plates afford the sole clue to the absolute chronology of the Bronze Age on the Jenissei. In west Siberia they originated, at the earliest, in the first or second centuries before Christ, and accordingly their appearance round Minussinsk can not be much earlier than the beginning of the Christian era. The collective burials probably ceased in the third or fourth century A.D. The transition from the full Bronze Age to that of the collective burials may be assigned to the third century B.C. at earliest, while the builders of the kurgans arrived only a century later. Merhart gives these dates with the greatest reserve. A dating of the full Bronze Age is still more difficult, but it is unlikely that it began before the first millennium B.C. Merhart's chronology, it will be seen, is a conservative one. He bases his opinion upon an assumed cultural lag in the secluded Jenissei district as compared with Russia or Hungary. We must await further excavations before we can reach perfect certainty in the matter. Recent Russian excavations have confirmed the dating of the second group of collective burials. In northern Mongolia mounds have been excavated which contained inscribed lac cups of the Han dynasty, associated with textiles on which are embroidered animal combats in the style of the gold plates mentioned above. (A short account of these excavations was published by Borofkha in the *Jahrbuch des Deutschen Archäologischen Instituts*, 1926).

Only the most important results have been summarized in the foregoing review. There is, of course, much else in the book which has necessarily been passed over. Several points which are not yet ripe for discussion Merhart has only touched upon. He has provided guide-posts for those who may make further exploration of these distant territories. Special attention should be drawn to the author's critical attitude and conservative conclusions, on account of which his book can be heartily recommended.

K. TACKENBERG.

ANNUAL REPORT OF THE ARCHAEOLOGICAL SURVEY OF INDIA, 1924–5. *Edited by* J. F. BLAKISTON. *Calcutta: Government of India Central Publication Branch*, 1927. 41*s* 6*d*.

It must be confessed that until the Archaeological Survey of India pay more attention to pottery and, in fact, return upon their tracks to systematize and publish in full the ceramic evidence of their former excavations in India proper, it will be extremely difficult

to estimate the present position of archaeology in India. One thing only is evident, that at the moment we have not the necessary evidence before us to speak of Indian 'cultures' either chronologically or distributionally. Therefore, when Sir John Marshall, on page 63 of the Archaeological Survey Report under review, refers to the destruction of the 'culture' of the 'pre-Aryan probably Dravidian people of India' by the invading Aryans, and compares it with the destruction of Aegean culture by the Achaeans, his use of the word is something other than archaeological.

Indian archaeology is approaching its centenary. It is, therefore, full time that stock was taken of its position. The first defect in it is its isolation, but the brunt of this falls upon archaeologists as a whole. They have failed to be interested in India, and the consequent lack of any appreciable body of criticism has had its enervating effect upon the study. The existence of the Archaeological Survey is not sufficient. Sir John Marshall and the department he has built up around him are beset with many evils, the chief of which may be said to be conservation. Rupees are spent in driblets up and down the face of India upon the patching up of unimportant remains, and the way of the tourist is made straight at Sanchi and Taxila. But Indian pottery remains a sealed book, the treasures of Kushan sculpture in the Mathura Museum are unpublished, and, several years after Sir John Marshall's publication of the discovery of the Indus valley sites through the *Illustrated London News*, we are still being fobbed off with odds and ends, without any attempt being made to put the facts on the table. It is, after all, a matter of science. Whatever may have been the case in the past, there is genuine interest in things Indian today. Is it absurd to suggest that it is the duty of the Archaeological Survey of India to cater for this interest, or at any rate not to obstruct scientific research by withholding primary facts? Theories are not wanted from a public body such as the Survey. At any rate, however complicated the problem, publication of the evidence would, without a shadow of doubt, lead to a more rapid solution. This report, like its forerunners, does not attempt to state the facts, although both at Harappa and Mohenjo-Daro the excavations are now obviously extensive. It appears, moreover, that investigations have been pushed further afield. Mr Hargreaves takes three pages of this volume to say what he did not find after a somewhat cursory examination of various sites in Baluchistan. For some time past it has been more than rumoured that Sir Aurel Stein has lately conducted researches in the same direction and that he did find a very great deal.* Sir Aurel's official integrity is, of course, beyond suspicion. It is not his fault that accusations of an official embargo upon even discussion have got abroad.

With regard to the objects illustrated in this volume, the Sampur mound (Mastung) excavations produced a silver standing-cup of a type well known at Taxila and datable about the 1st century A.D. With these Mr Hargreaves associated a series of pottery cups with baluster-feet, of reddish-buff ware with a brick-red slip, apparently polished on the wheel. These cups belong to a widely distributed type; reference may be made to the Survey's finds nos. 3 and 10 at Tinnevelly, many examples at Charsada, a late Graeco-Buddhist site, and to what is probably the primitive Indian form, nos. 11 and 9 at Bhita, which I have dated approximately 2nd century B.C., but which Mr Hargreaves believes to have been occupied for some centuries before and after the beginning of the Christian era. No. 69, a small oval vessel with the neck to one side, has a duplicate on a larger scale, found at Harappa and published in the *Illustrated London News* under the title 'wine-cooler'.

* See for instance his note in the *Geographical Journal*, April 1928, pp. 377–80.—EDITOR.

With regard to Mohenjo-Daro, the ivory spatulas engraved with circles suggest comparison with the ivory fragments from Brahmanabad, Sind, in the Bellasis collection in the British Museum ; these were illustrated as fig. 8 in the Survey Report for 1908–9. It seems doubtful whether the large silver ornaments of plate XXC are really earrings. In many ways they are comparable to the Taxila anklets from Sirkap (Survey Report, 1912–13, plate XXI a).

The discovery at Harappa of large quantities of animal bones, among which are those of horses and ' oxen ', suggests a point raised by Mr F. J. Richards, I.C.S., at a committee meeting of the India section of the Royal Anthropological Institute. The humped *bos indicus* does appear on these Indus Valley seals (plate XII a), but he appears to be in the minority. The question of his provenance is one of great interest, because, in spite of Siva's Nandi and his name, *bos indicus* is obviously not native in the greater part of India, that is to say in the Deccan and the South. Here the buffalo is all prominent, both for everyday use and for cult purposes.

Lastly, in view of past inaccuracy in ceramic terminology (*vide* Bhita, report quoted, for glaze=paint-polish), attention must be drawn to certain antiquities from Sarnath described as ' copper ' on p. 15, one of which is dubbed ' bronze ' on page 135.

K. de B. CODRINGTON.

THE ROMAN LEGIONS. *By* H. M. D. PARKER. *Oxford : Clarendon Press.* 1928. *pp.* vi, 292. 15*s*.

Mr Parker has written a notable book. The work will last for some time, not merely because it is the first adequate statement upon its subject in English, and is therefore bound to have a wide circulation in Britain, but because it treats the subject in annalistic mode. In other words, the legions are not dealt with in order of number, but in relation to the history which they made. It would, of course, be easy to quibble at points of detail in so vast a theme. For example, one misses the name of Rutilius in the account of the Republican army, a name worth mention, if only in contrast to the prominent Marius. Again, the question of Leg. II Adiutrix is certainly not stated in final form, and British students will doubt whether the legion can have left Britain before the close of Agricola's campaigns. On p. 143 (l. 15) XV should be XVI, or we add to the confusion of 69. But this is not the journal in which detail of this kind can be profitably discussed, and it is better to emphasize the great merits of the book, pointing out at the same time one direction in which its value might, in our view, be considerably increased.

The book succeeds adequately in giving a picture of the state of the Republican army before the reforms of Augustus. In the description of the new arrangement a general map of the Empire would have been of the greatest help, if only to show the significance of the distribution, with its consequences for the history both of the frontiers and of the Imperial *pronunciamenti*. Not that the text is insufficiently clear, but, as readers of ANTIQUITY will appreciate, a map crystallizes facts in a way which words do not. This could have been done without indicating the precise quarters of the legions, a matter of difficulty and doubt. Further, in the middle Empire, the relation of the legions to the fort-systems of auxiliaries is of great importance and might have been indicated. In fact, the maps of the different frontiers attached to the book do only half the work they might. Nor is this half always adequate. What indication of the strategic value of the German frontier, whose relation to Free Germany is as important as its relation to the Rhine, is given by the map on p. 121 ? An illustration of forest-lands

and river-valleys in Free Germany is here an urgent need. On p. 124 we miss an indication of the Dobrudja, Aluta and N-W Dacian *limites*. On p. 127 the shading for contours in Asia Minor unhappily obscures the scanty road system shown, and the area covered by the map is inadequate for a realization of the strategic significance of the frontier. Is it, again, useless to hope that the British road-system will ever receive adequate treatment? One asks for no intricate detail, but the Fosse-way and the two north roads from Chester and York might at least be marked. Again, how much land in Britain is over '3000 feet' (p. 130)? Certainly, very little in the Pennine range, or even in Wales.

These criticisms are, moreover, hardly counsels of perfection. For the lack of adequate maps leads to some misconception in stating the general position about the strategic value of the legion. No student of Roman frontiers will believe the statement (page 163) that *Hadrian* put into effect a system of frontier defence of which the feature was that legions formed the second line of defence. The Flavians had already found the system in existence and applied it on a large scale both in Germany and Britain; the system is already evolved on the Upper Danube under Tiberius, and meets us, fully fledged, in the land of the Batavi in 69; in Britain it was in full swing by 85. It may be suggested, therefore, that it would be well worth while to revise these maps in a second edition, without necessarily including any detailed picture of the auxiliary fort-system.

Wholly admirable are the sections which deal with the officers of the legion, with conditions of service, and with fighting, where particularly interesting use is made of papyri. In most cases the original text is given, and one might therefore plead custom, as well as convenience, in asking for it in the letter from the soldier who had spent all on a donkey-cart—a letter of great human interest and amusement. In connexion with armour it may be noted that if the *lancea* was being introduced for *legionaries* at the close of the first century, the sin for which Sallustius Lucullus was executed may have been graver than supposed. Lucullus was tampering perhaps with legionaries, and not auxiliaries; hence Domitian's nervousness. Another point; cleaning of armour no doubt dictated that the soldier should wear his leather over the metal.

Enough has been said to indicate the interest of the book, perhaps too little, in view of the emphasis upon maps, to indicate its full value. Whether changes are made in the maps or not, the book will still remain of great use to the reader for the amount of useful information contained between its covers. Further, it should be said that the author is no slavish follower of Ritterling and von Domaszewski; where he differs from them, as in the matter of *signa* and the selection or significance of legionary numbers and titles, he states both cases fairly, and his own with convincing persuasion. The future student of the Roman army will therefore require not only the German works, but this one as well, as an essential companion to his studies. I. A. RICHMOND.

THE ROMAN CAMPAGNA IN CLASSICAL TIMES. *By* THOMAS ASHBY. *Ernest Benn.* 1927. *pp.* 256, 48 *illus.*, 1 *map.* 21*s.*

Dr Ashby's book, in his own words, aims at being a first essay on the history and antiquities of the Roman Campagna, that district of Italy which is so suggestive; for here the life of Rome increased and expanded, particularly in Imperial times, producing such abundance of monuments as to become so to speak identical with Rome herself, that is to say, a necessary complement to the richness of her being. The history of the Campagna is almost entirely a story of the Empire, of villas, roads, tombs and aqueducts;

the district is crossed in every direction by the vast network of routes that diverge from the city to unite the furthest limits of the empire, before each finally makes for its own objective. Dr Ashby's purpose is to trace these routes, and to note the advance of Roman civilization which was still to be found along them until intensive cultivation of the soil caused fresh and irreparable loss; this purpose he has already pursued in the *Papers of the British School at Rome* from 1902 to 1910 and in other periodicals; and he now seeks to renew it in a general account, so as to bring the very notable results of his inquiries (extending over twenty-five years) before both the world of learning and a less specialized public.

These results are not only concerned with topography, but out of the study of the different monuments the history itself of Rome appears, with the successive enlargements of her territory made in her early days during the vital struggles with her neighbours, Etruscans, Volscians, Latins, Sabines and others. In place of the merely local roads which joined Rome to the cities near by, such as Veii, Ardea, Satricum, Castrimoenium, Labicum, other roads were gradually substituted, taking a more direct and practicable course; such were the *via Appia* and *via Latina*, intended to provide for the rapid transport of troops which were constantly passing from Latium to carry on wars in Etruria and Samnium.

Dr Ashby has some interesting pages on the districts in which occurred the famous battle of the Allia between the Romans and Gauls, and that at Saxa Rubra between Maxentius and Constantine which ended in the death of the former and the triumph of the Christian emperor.

Of great interest also are the operations connected with drainage, with the dressing of the soil, with the works for aqueducts, and with the huge water-cisterns. All this Dr Ashby details with his own peculiar knowledge, emphasizing their importance for rural cultivation in ancient times when the country was much more populated and richer in buildings than it is today. The beautiful villas of the Tiburtine and Tusculan districts, with their deep-laid foundations still standing after so many centuries, are excellently described with full notes on the finds of *objets d' art* belonging to the different periods. Thus the famous temples of Tivoli, Gabii and Palestrina receive their due judgment from the point of view of their period and artistic form, while Dr Ashby throws aside false myths and legends such as are too often accepted even in authoritative works.

These descriptions are accompanied by exceptionally beautiful photographs which greatly enhance the value of the book, which is excellently printed. There is a general introduction, written with authority, which gives the reader a complete and rapid view of the Roman Campagna from its prehistoric period up to the present day, bringing out the entire and peculiar importance of the district, so worthy of special and comprehensive attention.

GIUSEPPE LUGLI.

ULSTER: ITS ARCHAEOLOGY AND ANTIQUITIES. *By* HENRY CAIRNES LAWLOR. *Belfast: Carswell and Son.* 1928. *pp.* 232 *and* 45 *illus.* 6*s.*

By his previous writings, and still more evidently by his activities in scientific excavation, Mr Lawlor has shown that he is a keen antiquary, and we welcome this comprehensive sketch of the archaeology of Ulster from his hand. It may be said that you cannot get a fruitful knowledge of archaeology by studying the antiquities of one province, or even of all Ireland alone, but as a beginning we cannot do better than

learn what is known about the sites and objects around us, with which we are more or less familiar, and even if we go no further our lives will be the fuller and better for the study.

It was on the coast of Antrim, says Mr Lawlor, that man, attracted by the numerous flints to be found on the raised beaches there, first landed in Ireland. According to the best informed opinion the worked flints to be found here, though not pre-glacial or palaeolithic, are among the earliest neolithic types that have yet been found. No sign of charcoal or pottery has been found on these raised beaches, and it is suggested that man, while using these sites as a workshop, did not settle here; but first regularly settled at a later period on the banks of the rivers Bann and Lagan, where evidence of the use of fire is found together with neolithic implements.

Mr Lawlor soon passes on to the discovery of copper and bronze, and the megalithic monuments of the Bronze Age, sometimes with concentric, spiral, and other designs incised on them. Here he mentions the important stone found at Holywood, co. Wicklow, now in the portico of the Dublin museum. He rightly notices the close resemblance—he might have said virtual identity—of its labyrinth-design with that of certain coins from Knossos, a design which continued to appear, sometimes with slight additional complications, up to recent times (see *Journal Roy. Soc. of Antiquaries of Ireland*, LVI, 177–80). It is however misleading to couple it with the rude sculpturing of the Seskilgreen stone, of which Mr Lawlor gives an illustration. It may possibly be traceable to a similar symbolic origin, but it cannot have been evolved in this country from any such rude petroglyphs. It must have been imported after it had attained its permanent form elsewhere. Later on, the archaeological remains illuminate and are illuminated by the faint beginnings of traditional history. Successive artificial boundaries known as the Black Pig's Dyke, the Dane's Cast, etc., mark the gradual retreat eastwards of the pre-Gaelic races in Ulster. Iron weapons, *laighin*, which have given name to Leinster, mark the coming of the Gael, as also does the La Tène ornamentation. Indeed as we approach later times, even after the beginnings of written record, more and more does archaeology serve as the hand-maid of history.

Mr Lawlor's knowledge of the sites and remains of the early Anglo-Norman mote and bailey fortifications and the later stone castles has enabled him to give a more complete account of these structures in the north than has yet appeared, and it is to be hoped that the additional evidence he adduces of the results of excavation at the great mote just outside the city of Down will finally dispel the error of its identification with the ancient Rathcelchair. We also quite sympathize with his strictures touching the re-naming and recent alterations of Jordan's castle at Ardglass, as being an inexcusable falsification of history. Finally, Mr Lawlor gives a useful account of the ecclesiastical ruins and ancient churches of Ulster. Of special interest are the excavations undertaken by the Archaeological section of the Belfast Natural History Society, under Mr Lawlor's guidance, on the site of the monastery of Nendrum. These are referred to on p. 69 ff. and fully described in a separate publication. Also the careful restoration by the same Society, with the help of a photograph, of the Romanesque doorway of White Island church in Loch Erne which had recently collapsed (p. 171).

The book is well printed and illustrated, and with the exception of some incorrect Gaelic forms on pp. 36, 153, and 180, we have noted very few mistakes. We can in short confidently recommend the book as a good introduction to the intelligent study of Ulster archaeology.

GODDARD H. ORPEN.

THE CAERLEON AMPHITHEATRE: a summary. *By* TESSA VERNEY WHEELER, F.S.A. *Reprinted from* ARCHAEOLOGIA CAMBRENSIS, June 1928. *pp.* 32, *and* 13 *figs.*

The excavation of the Roman amphitheatre belonging to the legionary fortress at Caerleon on Usk was in many ways a notable achievement. We hear much of the power of the press, but this power is seldom used for the direct promotion of knowledge for its own sake. The *Daily Mail*, in buying the amphitheatre and providing funds for its exploration, showed that the proprietors of an important newspaper can look upon archaeological research as a thing worth their financial backing ; and that is a testimony to the position which studies of this kind are beginning to take in public opinion. But if the excavation was remarkable in one way because it was financed by the *Daily Mail*, it was equally remarkable in another way for its scientific character. There are several Roman amphitheatres in this country ; but not one has been hitherto dug. The work of the Liverpool committee at Caerleon in 1909 gave us a general view of the structural principles of the building, but no more ; and not even that much has been done at any other British site of the kind. It is all the more satisfactory to be able to say that the Caerleon amphitheatre has now been completely dug ; a thing that can be said of very few sites in this or any other country, and a thing greatly needed. Of the people who did the work, none has a better right to discuss it than Mrs Wheeler, who was in command for eight months, and whose standing as an archaeologist may be judged from the fact that she is one of the five women who have been admitted to the Society of Antiquaries. Her summary of the results in this pamphlet is admirably clear, sufficiently documented to give some idea of the quality and quantity of the evidence on which it rests, well illustrated, and brief. A full report of the excavations appears in *Archaeologia* (vol. 78), but even the expert does not always want to wade through a full report, and a summary of this kind is invaluable, not only to the many who are not experts, but to everyone who wants the results put in a handy and concise form. To all such, Mrs Wheeler's pamphlet may be recommended without reservation. R. G. COLLINGWOOD.

DIE KUNST DER ETRUSKER (Die Ursprünge). *By* HANS MÜHLESTEIN. *Berlin: Frankfurter Verlags-Anstalt.* 1928. *pp.* 125, *with* 238 *plates*, 12 *text-illustrations and descriptive catalogue*, *pp.* 130–238.

This is the first of a series, to consist apparently of three volumes, intended to cover the whole subject of Etruscan art. The periods included in the first volume are the Early Orientalizing time from the second half of the eighth century to the second half of the seventh, and the Later Orientalizing phase from B.C. 650–550. No less than 238 excellent full sized plates constitute the illustrative material, and are accompanied by a full and careful descriptive catalogue, including its bibliography. As the price of the book is only 24 marks unbound, or 27 marks bound, it is evident that the illustrations alone would make it worth purchase. These include not only the principal objects illustrated by Dinsmore Curtis in his editions of the Bernardini and Barberini tombs, but a number of other specimens, some of which, especially those in German collections, are less generally known.

The text proper, apart from the catalogue, consists of 125 pages divided into four chapters, which contain a rather brief but strikingly individual contribution to the history of Etruscan Art. The very broad and sweeping generalizations will inevitably provoke a certain feeling of antagonism at the first reading, but deserve really careful consideration. We cannot refrain however from suggesting that they would have been

more convincing if they had been accompanied by a detailed critical analysis such as the author has not made in this book. A fourth volume might well be devoted to such a task. As it is these essays necessarily presume a long and close acquaintance on the part of the reader with the whole of the subject material not only of this volume but of the others. Given such an acquaintance however they are extremely valuable and suggestive. Mühlestein writes, perhaps rather deliberately, unlike anyone else, and starts from a point of view which has never before been adopted. But he is perfectly logical, and this is one of his principal merits. Starting from the standpoint that the Etruscan 'Herrenkunst' is the independent production of a people of near-Asiatic origin he pushes the theory to its strictly logical conclusions, attempting to differentiate the orientalizing phases of the Etruscan at once from the Greek and from the contemporary branches of other oriental art. This is almost the first time that a critic has made a real effort to view Etruscan things without looking through Greek spectacles, and it marks a welcome advance for which Mühlestein deserves the fullest credit. Many of his particular judgments are strikingly true, and he has a real talent for art-criticism on broad lines.

Mühlestein's main thesis is that the Etruscans are one of the few identifiable distinct units of a native Mediterranean pre-Hellenic race, represented also in the Aegean by the Cretans and in Asia Minor by the Chalder, that remarkable people discovered in Armenia by Lehmann-Haupt. He uses with great effect the material which is just about to appear in Lehmann-Haupt's second volume, the advance-sheets of which were supplied to him by that author. It is impossible in a brief review to enter into all the details and implications of a theory which will be startling to most readers, but deserves serious and careful consideration. D. RANDALL-MACIVER.

DIE DENKMÄLER DES RÖMISCHEN KOLN. *By* DR FRITZ FREMERSDORF. *Berlin : Walter de Gruyter.* Band 1, 1928. 5 RM.

Dr Fremersdorf here gives us the first volume of a work on the Roman monuments of Cologne. It appears that structural remains are not to be included ; but future volumes are promised on glass, pottery, bronzes, objects in ivory, jet, amber and precious metals, sculptures, and mosaics ; in fact, museum objects in general. The first volume, the only one hitherto published, consists of ten pages of introduction followed by 150 photographic plates, six inches by four, each with a few lines of explanatory text. The material dealt with consists of the major additions to the Roman collections in the Wallraf-Richartz Museum made in the course of the last five years—the period during which the author has been in charge of the department. It is a curious principle on which to select the contents of a book, and it is difficult to see why it should have been adopted, unless one takes seriously the author's remark that 'it may at any rate serve as a report on the results achieved by my own labours'. However, the plates, most of which show one object each, on a large scale, are admirable, and give an excellent general review of the industries of Roman Cologne. The later volumes ought to be even more interesting. R. G. COLLINGWOOD.

CORRIGENDUM

On page 113 *ante*, lines 12 and 17 *for* Pressigny *read* Pressagny

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